Governance Needs for Promoting Green Employment in India's Artisanal Bamboo Industry

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Abbreviations

ADB	Asian Development Bank
ADC	Autonomous District Councils
BDA	Bamboo Development Agency
CCDRC	Community-Based Conservation & Development Research Centre
CBS	Copenhagen Business School
CEMCA	Commonwealth Educational Media Centre for Asia
CFC	Common Facility Centre
CIBART	Centre for Indian Bamboo Resource Development
EDP	Enterprise Development Programme
DAC&FW	Department of Agriculture, Cooperation and Farmers Welfare
DFID	United Kingdom's Department for International Development
DMI	Directorate of Marketing and Inspection
DRDA	District Rural Development Agencies
FMC	Foundation for Micro Small and Medium Enterprise Clusters
GIM	National Mission for Green India
FAO	Food and Agriculture Organization
FMC	Foundation for MSME Clusters
FSC	Forest Stewardship Council
IBF	India Bamboo Forum
INBAR	International Network for Bamboo and Rattan
JFMC	Joint Forest Management Committee
JICA	Japan International Cooperation Agency
MAI	Market Access Initiative
MDA	Market Development Assistance
MEI	Merchandise Exports from India Scheme
MoEFCC	Ministry of Environment, Forests and Climate Change
NABARD	National Bank for Agriculture and Rural Development

NBDA	Nagaland Bamboo Development Agency
NBFC	Non-Banking Financial Companies
NBM	National Bamboo Mission
NITI Aayog	National Institution for Transforming India
NNR	National Nature Reserve
NREGA	National Rural Employment Guarantee Act
NTFP	Timber and non-timber forest produce
OBDA	Odisha Bamboo Development Agency
OFDC	Odisha Forest Development Corporation
OSH	Occupation Health and Safety
PBG	PingShang Bamboo Group
PMEGB	Prime Minister's Employment Generation Programme
RSETI	Rural Self Employment Training Institute
SC	Scheduled Caste
SDG	Sustainable Development Goal
SHG	Self-help group
SIDBI	Small Industries Development Bank of India
ST	Scheduled Tribe
UNIDO	United Nations Industrial Development Organisation
UNOSSC	United Nations Office for South-South Cooperation
VSS	Vana Surakhya Samiti

Executive Summary

This paper draws out key learnings related to improving governance systems to create opportunities for green job creation through the growth of India's artisanal bamboo industry. India houses millions of bamboo artisans often working in micro-enterprises in remote communities that suffer from high levels of poverty. Multiple opportunities exist for these artisans to increase their bamboo-related income. The products these artisans create provide functional and decorative uses that could appeal to diverse consumer groups. In addition, these products, which typically use sustainable techniques and materials, can act as replacements for many less sustainable items as bamboo is often more environmentally friendly than other raw materials (e.g., plastic, timber, or metal). Thus, helping India's bamboo artisans to expand and improve their production and link to new markets, can help to reduce poverty and address global environmental challenges.

This report first reviews the current situation facing India's artisanal bamboo value chains. This industry involves bamboo products being created through craft-based techniques. Products are typically sold in local markets. However, some producers are already connected to more complex value chains, including those linking to global markets. Key strengths and weaknesses of India's artisanal bamboo industry are outlined in the table below.

Elements	**Producers' Strengths**	**Producers' Weaknesses**	**Production Ecosystem Strengths**	**Production Ecosystem Weaknesses**
Socio-Economic Situation	• Some own land • Engage in diverse livelihood strategies	• Some do not own land • Lack of occupation-al safety and health (OSH) equipment and protocols • Lack of sufficient safety nets • Many from low-income households or other vulnerable groups (e.g., Scheduled Castes and Tribes) • Often located in relatively isolated communities	• Availability of welfare schemes (e.g., ration cards) • Availability of insurance schemes • Availability of bamboo • Sustainable cultivation practices • Opportunities to learn bamboo craft skills	• Formal jobs are often in low supply in remote regions where artisans are located • Limited availability of OSH training and equipment • Bamboo considered as one part of multiple livelihood support system • Gender norms shape opportunities
Skills	• Traditional artisanal production skills and designs	• Lack of advanced technical skills • Lack of quality control and consistency • Low productivity • Lack of management and administrative skills • Lack of innovation	• Tradition of family-based training • Diverse training programmes have been developed	• Some training programmes promote practices that are not aligned to market demand • Lack of impact of training

Elements	Producers' Strengths	Producers' Weaknesses	Production Ecosystem Strengths	Production Ecosystem Weaknesses
Capital	• Some knowledge of and access to financing schemes	• Lack of equipment • Lack of finance	• Diverse financial services exist	• Lack of promotion of options • Lack of financial training for artisans • Gender shapes access to finance
Business Models	• Some producers are working with collabor-ative models	• Lack of cooperation • Not harnessing potential revenue streams from waste • Weak positioning in value chains • Often unregistered household-based units producing low volumes • Often sell products for low prices	• Some programmes developed to support collaboration • Some business training programmes are available	• Limited reach of programmes promoting collaboration • Pressures from norms and traditions support the persistence of inefficient business models
Connections to Markets	• Ongoing connections to local traders	• Poor awareness of market opportunities and demands	• Some interventions provide information about markets • Growing middle class in India has growing demand for household products • Demand for sustainable products • Demand for craft-based products	• Lack of widespread information sharing related to potential markets for bamboo products • Poor perceptions of bamboo products among many potential buyers in India • Preferences for other materials among potential buyers • Competition, including from producers creating industrially manufactured bamboo products and products made from alternate materials • High variation in seasonal demand in local market
Logistics Systems	N/A	• Insufficient storage space	• Policies to improve logistics infrastructure • Emergence of dynamic national e-commerce delivery networks	• Underdeveloped logistics infrastructure • Lack of high-quality logistics service providers
Inputs	N/A	N/A	• Abundance of bamboo	• Deficiencies in bamboo cultivation • Post-harvest treatment deficiencies • In some regions, periods with deficiencies in bamboo availability • Lack of business service providers • Lack of equipment providers
Overarching System of Governance Initiatives	N/A	N/A	• Wide variety of support programmes • Cooperation between bamboo interventions is growing	• Programmes do not have the capacity to directly reach and provide support to all bamboo artisans • Insufficient coordination across programmes • Repetition

The next part of the paper considers options for how artisanal bamboo value chains can develop with a focus on products that can be made with resources and skills that are accessible in the short-term to rural artisans. Artisans can currently produce a wide range of products that include fuel, consumables (e.g., food), poles, handicrafts and utility items, and larger manufactured products (e.g., furniture). They can sell these products to markets within and outside of India. Key market options include:

- Large Branded Buyers (High-Income Countries or India / Other Low-Middle Income Countries)
- Smaller Retailers / Boutiques (High-Income Countries)
- Smaller Formal Sector Retailers / Boutiques (India & Other Low-Middle Income Countries)
- Informal Retailers / Markets (India)
- Nationally Organised Tourist Markets or Exhibitions (India)
- Large-Scale Consumers (Global or India)
- On-line Retail

The paper then emphasises that, as individual artisans have limited capabilities on their own, they can benefit via collaboration. Key benefits that producers can receive from collaboration are increased economies of scale, individual learning and growth (e.g., skill development or increased sales), and increased voice and negotiating power. Collaboration can also create spillover benefits that can be felt by the local region (e.g., job creation) and buyers (e.g., reduced transaction costs). As cooperating can be a difficult process, to support positive outcomes, the report notes the importance of designing collaborative models to meet producers' specific needs, while also drawing on identified best practices. Key decisions include balancing the effort required to develop a collaboration versus the potential benefits and identifying which elements of producers' businesses can benefit most from collaboration (e.g., sourcing, production, or marketing, etc.).

Furthermore, different models for governing production are outlined. These include self-governance, third-party governance, and buyer governance. The types of markets and production organisation options that are best suited to a group of artisans depends on their specific circumstance. Key factors are their existing capabilities, trends in market demand, and competition. The dynamics of these factors can differ for each market option. For example, production skills and logistics systems needed to sell to a high-end European boutique can differ from those needed for a US discount retailer or an Indian e-retail shop.

Finally, the report ends by identifying how governance systems can be improved to help harness opportunities and address the identified weaknesses and barriers. Four key opportunities for interventions that could enhance green employment in India's artisanal bamboo industry are supporting producer upgrading, encouraging producer collaboration, facilitating links to new markets and restructuring governance systems to support overarching improved dynamics in the production ecosystem. All four of these can also contribute to improving the artisans' socio-economic circumstances. Ways that governance actors can enable these key opportunities are outlined in the table below.

Opportunity	Strategic Options
1) Supporting producer upgrading	○ Promoting specific activities with high potential gains: ▪ using all parts of the bamboo, leaving no 'waste' ▪ improving finishing techniques and packaging systems ▪ certification, could cover quality, social, and/or environmental aspects ▪ innovation, could involve competitions or connecting producers to design institutes ○ Increasing access to inputs (e.g., raw materials, technology, finance, and skilled labour) ▪ supporting domestic supply of better-quality bamboo inputs ▪ supporting local businesses to sell needed production equipment ▪ subsidizing costs for more advanced equipment or storage facilities ▪ providing access to equipment or storage facilities through common facility centres ▪ supporting development of new forms of equipment ▪ sensitizing funders about opportunities in the bamboo industry ▪ creating new funding mechanisms ▪ educating producers about existing funding options ▪ connecting skilled individuals with the bamboo industry (e.g., creating fellowships for higher education students) ▪ promoting local training options for skills needed by growing businesses (e.g., bookkeeping) ○ Improving availability of business services (e.g., management and administrative services, market research, marketing, and common facility centres) ▪ providing incentives for business service providers to operate in areas with high concentrations of bamboo artisans ▪ providing subsidies for bamboo producers to access business services ▪ developing new service providers (e.g., training artisans to provide services to peers) ○ Directly providing business services ○ Running capacity building programmes (e.g., management skills, ways to have voice in public policy, production skills, obtaining certification, financial literacy, OSH, and innovation), such programmes can incorporate diverse methods such as formal courses, local workshops, online aspects (e.g., videos), and apps for smartphones
2) Encouraging producer collaboration	○ Directly supporting the creation of new collaborations (e.g., employing facilitators to enable the development of producer groups) ○ Creating incentives for producers to collaborate (e.g., offering benefits, such as loans, subsidies, or training for producer groups) ○ Identifying and disseminating information on opportunities for bamboo groups to benefit from collaboration (e.g., through social media, radio, or community events) ○ Promoting policies and regulatory requirements easing producer cooperation (e.g., simplifying requirements to register a group)
3) Facilitating links to new markets	○ Facilitating connections to existing markets through: ▪ supporting producer upgrading (see number 1 above) ▪ providing information about potential markets (e.g., conducting & sharing market research) ▪ ensuring logistics systems are adequate to facilitate market access, including communication and transportation systems ▪ training on marketing skills (e.g., social media, making a catalogue) ▪ creating connections to potential buyers (e.g., trade fairs, buyer-seller meets, e-platforms) ▪ creating a new certification or branding scheme to help market Indian bamboo artisans, such as a quality, social, and/or environmental label ▪ developing a bamboo marketing institution ○ Building national demand for bamboo products through: ▪ educating potential customers on the benefits of bamboo ▪ promoting local procurement of bamboo by government agencies and large-scale buyers through regulation and incentives

Opportunity	Strategic Options
4) Restructuring governance systems to support overarching improved dynamics in the production ecosystem	○ Changing structures and the balance of power in links to production networks ▪ promoting group formation (see number 2 above) ▪ creating direct connections that bypass intermediaries ▪ playing a direct production governance role or supporting the creation of socially driven intermediaries ▪ building new communication channels ○ Increasing coordination between actors supporting India's bamboo artisans ○ Ensuring a supportive policy environment in which artisans can easily benefit from available services (e.g., simplifying paperwork, making a guide of available services for bamboo artisans)

1. Introduction

Bamboo provides many benefits. Over 10,000 uses of bamboo have been documented (United Nations Office for South-South Cooperation [UNOSSC] & the International Network for Bamboo and Rattan [INBAR] 2017). Global trade in bamboo in 2019 was over 3 billion USD with the largest importers being Europe (33%), North America (32%) and Asia-Pacific (31%)[1] (INBAR 2021). Moreover, international trade of bamboo comprises only a part of the total trade, most of which is domestic (UNDP 2018).

India has the second highest level of bamboo growth in the world after China (Invest India 2021) and a large number of bamboo products are produced within the country. There are an estimated 2 million traditional Indian bamboo artisans (Forest Survey of India 2021). Many of these are from marginalized communities and it is an activity that often involves women. Additionally, bamboo provides a variety of other jobs, such as those related to cultivation and harvesting. Overall, over 8 million people in India are estimated to depend on bamboo-related industries for their livelihoods (INBAR 2014).

India's bamboo artisans can make products that appeal to a wide range of domestic and global buyers, yet they often produce low volumes and sell the bulk of their production at low prices in local markets or to local traders. These artisans often survive on very low household incomes and could benefit greatly from increased revenue generation. In addition, artisans' communities, which often have few formal job opportunities, could benefit from new job creation.

Furthermore, despite the high numbers of people already involved in the bamboo industry, compared to India's high levels of existing and potential bamboo growth, production of bamboo products is at a relatively low level. Notably, India was responsible for only 2% of global bamboo exports in 2019 (INBAR 2021). Many opportunities exist for India to play a bigger role in the global market for bamboo products.

While the expansion of the bamboo product industry has potential economic benefits, in addition, using bamboo as a raw material is often more sustainable than alternate raw materials. In many cases, using bamboo to create items that are currently made with plastic, timber or metal can reduce the environmental impacts of production processes. This benefit is particularly strong in India, where bamboo often grows naturally in forests and other patches of land with limited use of external inputs.

In this context, developments in the bamboo industry present many opportunities for green job creation in India. Overall, growth in this industry can help to address a number of challenges related to social and environmental outcomes. Drawing on learnings emerging from the Foundation for MSME Clusters' (FMC's) Promote Bamboo MSME Clusters for Sustainable Development project that provided a range of support services to cluster-based bamboo artisans in nine Indian states from 2018 to 2022, with the addition of supplemental research, this report focuses on identifying options for how governance systems can better support increased incomes and promote green job creation in India's artisanal bamboo industry.

[1] Japan was the destination of more than a third of these imports.

1.1 Potential Benefits of Bamboo Expansion

Expanding India's artisanal bamboo industry has many potential benefits. A key benefit can be found in the environmental implications. Bamboo products can often replace plastic products, whose creation, use, and disposal are tied to many environmental challenges. Additionally, bamboo provides a wide variety of regulating services, which include landscape restoration, sediment retention, carbon sequestration, carbon stock, air quality and local climate regulation, flood and landslide control, groundwater recharge, water purification, and moderation of extreme events (Paudyal et al. 2019). Notably, bamboo cultivation on degraded land can help to improve the soil quality and raise the groundwater table level (Food and Agriculture Organization [FAO] and INBAR 2018). Furthermore, bamboo provides natural habitats and helps to maintain biological diversity (Paudyal et al. 2019).[2]

Bamboo is also a very versatile raw material. It grows more quickly than timber and is very strong. As well as taking the place of plastic, it can also be used to replace wood and steel, particularly in the construction industry. The range of products that can be made out of bamboo is wide and includes food items, medicines, household items, larger structures, and bio-fuel.

In addition, bamboo provides a variety of social services. These include bamboo growth providing cultural services, which include landscape beauty, recreation and ecotourism, and cultural and religious value (Paudyal et al. 2019). Moreover, the development of bamboo businesses can involve the creation of diverse jobs in areas such as cultivation, processing, marketing, logistics, and management. Furthermore, Indian states with higher levels of poverty tend to have higher levels of bamboo production[3] and these jobs can make a real impact on these regions.

Overall, the bamboo industry has the ability to support multiple Sustainable Development Goals (SDGs) (INBAR 2020).

- SDG 1: End poverty in all its forms everywhere.
- SDG 7: Ensure access to affordable, sustainable, and reliable modern energy services for all, including the aim to double the share of renewable energy by 2030.
- SDG 8: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all.
- SDG 11: Build inclusive, safe and sustainable cities and human settlements, including access to adequate and affordable housing.
- SDG 12: Promote sustainable consumption and production patterns, which includes sustainable management and efficient use of natural resources by 2030.
- SDG 13: Promote actions at all levels to address climate change.
- SDG 15: Protect and restore terrestrial ecosystems and halt all biodiversity loss, especially the call for restoration of 15% of all degraded ecosystems by 2030, and increase forest cover and integration of natural resources into planning and development processes.

[2] Unless it is cultivated in extended monocultures or forest land is cleared for its cultivation.

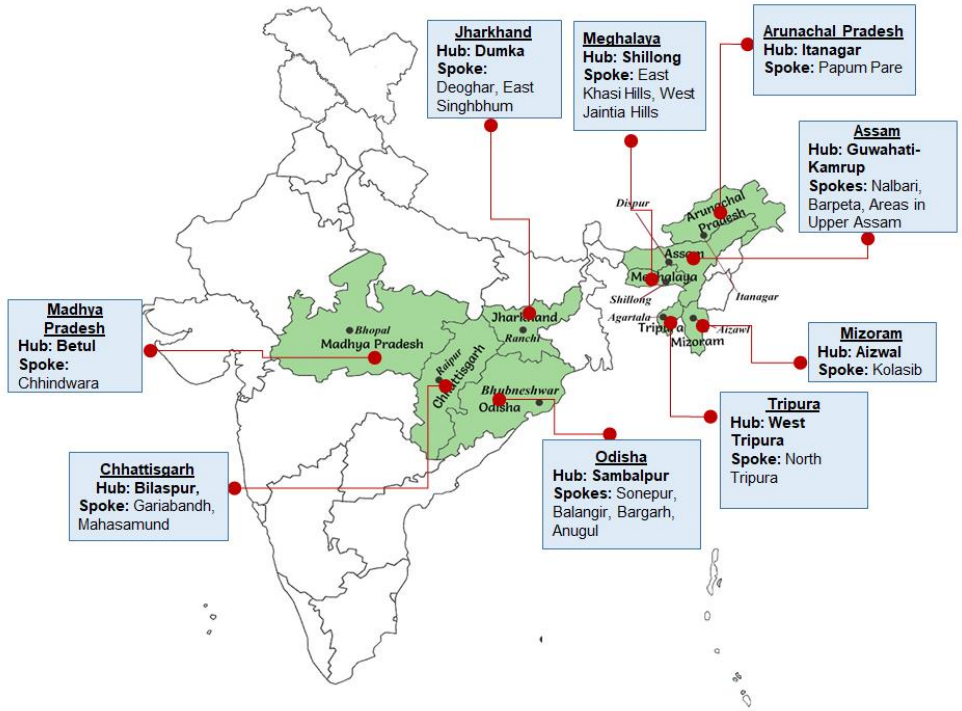
[3] The states with 20% of the population or higher identified as having consumption-based poverty in 2011-2012 had an average of 514 bamboo culms per capita found in recorded forest area in 2021-2022, compared to the states with lower levels of poverty, which had an average of 170 (Reserve Bank of India 2021; Forest Survey of India 2021; IndiaCensus.net 2022).

1.2 *Promote Bamboo MSME Clusters for Sustainable Development*

To harness the benefits of bamboo, the 'Promote Bamboo MSME Clusters for Sustainable Development' project was managed by FMC. It was carried out in partnership with the Small Industries Development Bank of India (SIDBI), the Common Wealth Educational Media Centre for Asia (CEMCA), and Copenhagen Business School (CBS) and received support from the European Union, under the EU SWITCH ASIA programme. The objective of the project was to promote bamboo as a sustainable resource and generate green jobs.

Working closely with the National Institution for Transforming India (NITI Aayog) and the National Bamboo Mission (NBM) at the national level, from 2018 to 2022, the project ran in 9 states (Madhya Pradesh, Chhattisgarh, Jharkhand, Odisha, Meghalaya, Tripura, Arunachal Pradesh, Mizoram, and Assam). The intervention involved a cluster-based approach which worked with a selection of clusters in each state (see Figure 1). In each location, the project involved working with hub clusters in connection with various spoke clusters. FMC worked to support state level actors, including Bamboo Missions and Rural Livelihood Missions. They were also involved with providing direct support to artisans. This support included helping artisans to access technical, managerial, financial, and post-harvest inputs, as well as organising training programmes and awareness raising campaigns. FMC's project also created connections with banks and other business development service providers (e.g., companies providing packaging). At the end of October 2022, the project had directly reached 2,623 bamboo artisans, 2,103 of whom were women; created and/or supported 7 common facility centres; partnered with 253 business development service providers and raw material/equipment suppliers; worked with 54 financial institutions in relation to making links with bamboo enterprises; and, engaged in sensitization activities with 357 policy makers. Overall, the project has generated 6,178 jobs, out of which 4,139 are have been for women.

Figure 1: Promote Bamboo MSME Clusters for Sustainable Development Coverage



Source: FMC 2020

1.3 Report Overview

Bamboo products can be divided into two groups. One is traditional products that can be made manually, such as baskets and incense sticks. The other involves products that require higher technical skills, such as bamboo plywood and bamboo textiles. This report focuses on the first category of products that can be made by small-scale artisans. The purpose of this report is to identify governance needs related to green job creation in India's artisanal bamboo industry.

This report draws from multiple data sources, which include experiences shared by FMC staff members, interviews,[4] and reviewing available documents. Across the report, experiences from three case study states (Assam, Odisha, and Jharkhand) are specifically focused on. Additionally, global and Indian examples of successful businesses are presented to help draw out best practices.

Chapter 2 provides an overview of bamboo value chains in India. The first part covers bamboo growth and cultivation. The second part outlines artisanal production practices. Finally, the third part identifies key strengths and weaknesses of Indian artisanal bamboo value chains.

Chapter 3 considers options for future developments. The first part outlines market options. The second part describes a variety of production organisation options. This chapter concludes by considering potential growth pathways that may be suitable for different groups of producers around the country.

Finally, Chapter 4 identifies four key opportunities for improving governance systems to support green job creation in India's artisanal bamboo industry. These include supporting producer upgrading, encouraging producer collaboration, facilitating access to new markets, and restructuring governance systems to support overarching improved dynamics in the production ecosystem. To facilitate these opportunities, the chapter presents a series of strategic options for governance actors. These options are based on harnessing the strengths and addressing the challenges identified in Chapters 2 and 3.

[4] Annex A provides an overview of the interviews.

2. Bamboo Value Chains in India

Bamboo is grown and processed across multiple parts of India. The construction sector is India's largest consumer of bamboo with an annual consumption of 3.4 million tons (UNDP 2018). A 2014 estimate found that the main use of bamboo was scaffolding (25%), followed by handicrafts (19%), paper (18%), illegal exports (13%), internal consumption in bamboo growing households (10%), and miscellaneous (15%) (INBAR 2016). However, it is important to note that it is difficult to track informal uses of bamboo, including its use in artisanal production (Tambe et al. 2020).

Tambe et al. (2020) identified three types of bamboo value chains within the country. One is defined as 'social', which involves communities using bamboo to meet local needs, such as fencing, housing, and utility items. The second is defined as 'industrial processing', which involves industrial scale processing and manufacturing (see Box 1). The third can be considered as 'artisanal' or 'handicraft',[5] which involves small-scale, craft-based production.

Box 1: Industrial Bamboo Production in India

Marsh and Smith (2007) classified industrial production for bamboo based on the value of processing involved and the grade of material used.

- unprocessed raw culms (stakes for horticulture, scaffolding for construction, etc.)
- low-value bulk processing (paper, charcoal, energy, etc.)
- medium-value processing (handicrafts, incense sticks, toothpicks, blinds, etc.)
- premium processing (flooring, tiles, ply board, etc.)

Tambe et al. (2020) found that the balance between these uses is changing in India. Selling unprocessed raw culms is increasing, low value bulk processing is decreasing, while medium-value processing is increasing. Premium processing has been largely absent. However, this industry is starting to develop. The nature of value chains for different end products shapes the types of jobs that are created during the production process. Analysing bamboo value chains based on their impact on job creation and farmer outcomes, Tambe et al. (2020) found that shifting from paper to horticulture was pro-poor, as farmers received more per culm. Medium value processing resulted in an intermediate (between paper and horticulture) level of farmer income per culm and created the most jobs.[6]

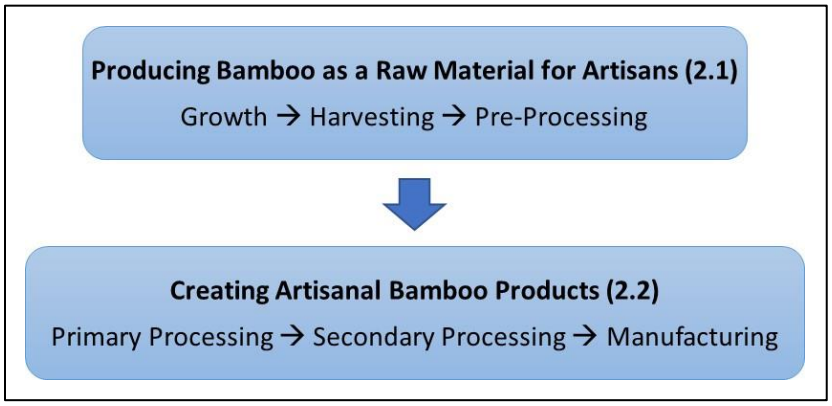
Another issue related to job creation in the bamboo industry is that some uses vary throughout the year (Tambe et al. 2020). Low value bulk processing happens year-round. In contrast, supplying raw culms for horticulture and construction is concentrated seasonally. Some artisanal items also experience seasonal periods of demand.

As mentioned in the introduction, this paper focuses on value chains for India's artisanal bamboo products. Products made by artisans are generally similar to those considered in the group of medium value processing (see Box 1). They are items that can be created by hand or with basic equipment. Value chains for diverse artisanal products generally have the practices which are depicted in Figure 2. Production can be considered as having two main stages. The first is obtaining bamboo. The second is creating bamboo products.

[5] Tambe et al. (2020) use the term 'commercial' to describe the third type.

[6] Premium processing was largely absent but also has potential to produce high incomes and job levels.

Figure 2: Bamboo Value Chain



Source: Author

This chapter focuses on identifying key features of artisanal bamboo product value chains in India. The key actors and activities involved in each stage of production are discussed. The first section focuses on bamboo growth as an input for artisanal production. The second focuses on artisanal bamboo product creation. Throughout these sections, activities within three states, Assam, Jharkhand, and Odisha, are highlighted. The final section of this chapter provides an assessment of India's artisanal bamboo product value chains by identifying key strengths and weaknesses related to the national ecosystem of bamboo production and characteristics of producers.

2.1 Producing Bamboo as a Raw Material for Artisans

Producing bamboo as a raw material for artisans involves multiples stages in India, which can be classified as growing, harvesting, pre-processing, and trading. The ways that the activities involved in bamboo production are carried out and the business models involved differ across the country. Notably, value chains can involve collecting bamboo that grows naturally, as well as relying on cultivated bamboo.

2.1.1 Bamboo Growth

Bamboo is relatively easy to grow and abundant in India. The country has 150,000 km² of land growing bamboo within the recorded forest area[7] (see Table 1 for a national breakdown) which had over 50 billion culms in 2021 (Forest Survey of India 2021). The top ten states in terms of bamboo culms are Arunachal Pradesh, Assam, Madhya Pradesh, Maharashtra, Odisha, Chhattisgarh, Nagaland, Karnataka, Andhra Pradesh, and Meghalaya (Forest Survey of India 2021). Over 135 species have been found within India, but most do not have commercial applications (Jayaraj 2021). In addition, bamboo is grown in non-forested areas, which includes plantations and other pieces of land. In 2005, 26% of India's bamboo was found to be on non-naturally regenerated land[8] (Lobovikov et al. 2007).

[7] Recorded forest area refers to areas legally classified as forests.
[8] Naturally regenerated land refers to growth without human propagation.

Table 1: Bamboo Forest Area in India 2021

State/UT	Bamboo Bearing Area in Recorded Forest Area (in km^2)
Madhya Pradesh	18,394
Arunachal Pradesh	15,739
Maharashtra	13,526
Odisha	11,199
Assam	10,659
Chhattisgarh	10,467
Karnataka	8,624
Manipur	8,377
Andhra Pradesh	6,104
Meghalaya	5,007
Mizoram	4,561
Telangana	4,535
Tripura	4,201
Tamil Nadu	4,001
Nagaland	3,947
Jharkhand	3,717
Gujarat	3,547
Kerala	2,404
Uttar Pradesh	1,832
Rajasthan	1,555
Andaman & Nicobar Islands	1,413
Uttarakhand	1,201
Bihar	1,103
Himachal Pradesh	1,027
Sikkim	994
West Bengal	702
Goa	288
Punjab	280
Haryana	39

Source: Forest Survey of India 2021

While India has the most land growing bamboo in the world and produces large amounts of bamboo, yields are much lower (maximum of 10-15 MT/Ha) than in China (average of 50 MT/Ha) (Department of Agriculture, Cooperation and Farmers Welfare [DAC&FW] 2019; Invest India 2021). Forest-based production, which makes up the majority of India's bamboo, can be enhanced through decongestion, soil working, and adding organic matter (Jayaraj 2021). However, the ability for people to intervene in forest-based bamboo growth is shaped by various forest management regulations, some of which are discussed below in the section on harvesting. Systems used for cultivated bamboo plots can also be modified to

increase yields. Productive changes can include planting higher-quality plants in selected species[9] and the use of irrigation and fertiliser (Invest India 2021; Jayaraj 2021).

As well as considering yields, another way to classify bamboo production is related to quality. Human intervention during the growth stage can help with preservation. Notably, pre-harvest treatments can help to reduce damage by fungi and insects (UNDP 2018). Additionally, integrated pest-management systems can have positive impacts. Indian bamboo production often does not receive such care during growth and consequently can have problems with quality.

As mentioned above, most bamboo grows naturally in forest areas. However, a large amount is also purposefully cultivated. Silviculture, the art and science of growing forest crops, involves appropriate nutrient management, pest and disease management, harvesting procedures, and post-harvest management (Jayaraj 2021). The knowledge and ability to manage bamboo cultivation varies between cultivators across the country.

One method of cultivation is on plantations. Plantation based production along with pest and disease management techniques can produce uniform raw material for industrial uses (Jayaraj 2021). To better support industry, separate plantations can be developed for poles and shoots that use different silvicultural systems. However, it is important to note that this form of production is generally not as sustainable as growth in mixed use land (Patel et al. 2020). Additionally, in India, plantations can involve contract farming, where the end user of the bamboo pays the farmers to grow it. This form of farming has been associated with poor outcomes for farmers (Singh 2008).

Another common way that bamboo is produced is through micro scale cultivation by small farmers as a subsidiary crop (UNDP 2018) or by non-farmers as part of small gardens. This form of production typically relies on informal techniques. Producers choose bamboo species based on availability as opposed to suitability. These uses are environmentally sound and pro-poor, but typically associated with very low value addition and incomes.

A benefit of bamboo Is that it can often be grown in marginal lands not suitable for agriculture (DAC&FW 2019). This creates opportunities for bamboo to be planted on previously underused land, which can create new sources of income and create environmental benefits through increasing forest cover. Places where bamboo can be grown include riverbanks, arable wastelands, along irrigation canals, and roadsides (DAC&FW 2019; Jayaraj 2021).

Indian bamboo production processes are shaped by several governance actors. One is the Ministry of Environment, Forests and Climate Change (MoEFCC), which coordinates policies related to forests. Important policies include the Indian Forest Act of 1927, which regulates protection of forested areas, and the Forest Policy of 1988, which covers the management and harvest of timber and non-timber forest produce (NTFP). MoEFCC also supports the National Afforestation Programme which seeks to increase and improve forest and tree cover and manage forest resources with a focus on improving livelihoods of communities connected to forests. This programme includes a goal of planting more bamboo.

[9] India's National Bamboo Mission (NBM) has prioritised 10 species of bamboo (Jayaraj 2021). Nine of these species grow naturally in the North East Region, with only two of these found outside the region. The tenth species, Dendrocalamusasper, is not naturally found in India.

Also, the National Mission for Green India (GIM), under the National Action Plan on Climate Change, carries out activities which shape national bamboo production. GIM seeks to improve the quality of forest and non-forest lands; enhance carbon sequestration through increasing forest and tree cover along with providing services, such as fuel, fodder, timber and NTFP; and increase income related to forest-based livelihoods. Related activities include the promotion of planting of bamboo in suitable areas.

In addition, the Ministry of Agriculture promotes bamboo plantation and development activities through the National Bamboo Mission (NBM) under the Mission for Integrated Development of Horticulture. The first phase of the NBM which ran from 2006/07 to 2015/16 was focused on propagation and cultivation. The NBM was then restructured and relaunched in 2018/19 to support the entire value chain, including planting material, plantations, collection, aggregation, processing, marketing, skill development, value addition, product development, and market linkages drawing on a cluster approach (Tambe et al. 2020; DAC&FW 2021).

An important change to regulation related to bamboo production has involved amending how bamboo is classified as a product. The Indian Forest (Amendment) Ordinance, 2017 exempted bamboo grown in non-forest areas from the definition of tree and removed the requirements of felling/transit permits for such bamboo's transport and economic use. The amendment sought to promote cultivation of bamboo in non-forest areas with the objectives of increasing income of farmers and increasing green cover (Forest Survey of India 2021).

In addition to national-level governance, individual states also have their own policy and legal instruments. Notably, state-based bamboo missions with representatives from departments such as Forests, Agriculture, Industries, and Rural Development now support the NBM (DAC&FW 2019). More details on key governance actors at the national and regional levels can be found in Annex B.

2.1.2 Bamboo Harvesting

Bamboo culms are harvested annually during the dry season (UNDP 2018). Harvesting is done in different ways, which can depend on how bamboo is grown. The best harvesting techniques can depend on the intended target use of the bamboo. Notably, the age of the bamboo changes its characteristics and potential uses. The typical process involves cutting the bamboo poles at the base with a sharp blade and removing the branches and attached foliage, leaving the bamboo poles (main stems). To encourage improved harvesting practices, the revamped NBM programme includes training on sustainable harvesting techniques.

Harvesting can involve collecting bamboo from forest land. Forest-based harvesting opportunities are shaped by India's restrictions on accessing and using produce from forested areas. The most restricted land is government-owned reserved forests, which require government permission for logging, hunting, grazing or other such activities. These forests, which sometimes involve local communities participating in management, cover 13.2% of India (Ghosh-Harihar et al. 2019). Another category is protected forests, owned by the government, with human activities allowed, unless explicitly prohibited. In India, 5% of land is protected with millions of people living close to these areas and sometimes within them (Ghosh-Harihar et al. 2019). A third category is communal forests, also known as village forests or panchayat forests, which are governed by local communities. Additionally, other unclassed forested areas exist, such as private land or conservation areas.

Members of tribal groups collect bamboo from forests through a system regulated by the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006, popularly known as the Joint Forest Management Act (Lund-Thomsen *forthcoming*). Forest-based harvesting can also involve illegal collection (FMC 2019a). Harvesting from forests is typically done manually with bamboo culms often transported by foot (UNDP 2018). Artisans are allowed to collect bamboo from forest land if they have an artisan card, which is provided by DC Handicraft (I25).

Alternatively, bamboo is harvested from cultivated plots. A bamboo plantation can begin harvesting three years after its establishment (Singh 2021). As mentioned above, harvesting from non-forested land is now easier since the Indian Forest (Amendment) Ordinance, 2017 eased restrictions on such bamboo's transport and economic use.

2.1.3 Bamboo Pre-Processing

For some uses, bamboo is sold in whole culms, such as for low value bulk processes (e.g., for the paper industry). In this form, bamboo receives lower prices. Pre-processing can help to increase bamboo's value (Tambe et al. 2020). In India, pre-processing is usually done manually.

One element of pre-processing bamboo is drying, which can be done by sunlight or an oven. The processes used can affect the final quality. In addition, a variety of actions can be taken to preserve bamboo (UNDP 2018). Post-harvest treatments using physical, chemical, and biological techniques can help to prevent insect and fungi damage. Bamboo can also be treated with fire-retardant chemicals, but it is an expensive process. Chemical treatments are most effective when applied soon after harvesting. However, in India it is common to sell untreated bamboo, which is then stored in unsuitable conditions that effect its quality. In such cases, the users of the bamboo treat it before further processing, which is less effective than treatment applied at an earlier stage. In the current system, manufacturers of high value bamboo products have to set up their own treatment facilities, which increases costs of production.

Pre-processing bamboo can also involve sizing (cross-cutting) and grading. In India, cross-cutting is often done with knives but can also be done with machines to achieve more uniform lengths. Three types of bamboo poles can be generated (Tambe et al. 2020). Jet, the middle lower part of the culm, has high strength and thickness and can be used for scaffolding or housing. Jumbo, the middle part, which has medium strength and thickness, can be used for poles in the horticulture sector or for handicrafts and small-scale industries. DP, the middle upper part, has low strength and thickness and can be used to support vegetables and nursery plants. External knot removal can also be done with heavy knives or with curved blade machines.

In some cases, secondary pre-processing is carried out. This can involve removing starch from the culm which helps with preservation and makes the colour more uniform. This can be done through a chemical treatment (UNDP 2018) or through soaking bamboo in water (FMC 2019a).

Overall, treatment and pre-processing are lacking for India's bamboo production. Several organisations have been involved in promoting upgrading related to bamboo processing. Notably, NBM is involved in promoting and setting up treatment and storage facilities and the Ministry of Micro, Small and Medium Enterprises is involved in promoting better treatment and preservation (DAC&FW 2019). FMC has worked with these organisations in its efforts to support improved post-harvest treatment.

2.1.4 Bamboo Trading

After sizing and grading, traders direct the culms to different value chains based on their thickness and strength. Proper sorting is very important as different potential users of bamboo have different requirements (UNDP 2018). Paper making and biofuel require mature bamboo with less moisture. Mat making requires one- or two-year-old green bamboo. Construction requires mature bamboo with different thicknesses but high wall thickness. Furniture making requires wider pieces with less weight (lower wall thickness). Incense stick making and bamboo mat making need high intermodal distance. Finally, while scaffolding can require longer pieces, paper mills prefer 8-10 ft long bamboo.

Bamboo poles are traded through a variety of processes (UNDP 2018). Local traders often buy small quantities of bamboo and do simple sorting and grading at the village level. They sell bamboo to artisans or larger traders that have depots. The larger traders then sell the bamboo to different industries and to wholesalers. Wholesalers sell to commercial enterprises and retailers. Bamboo consumers include rural households, bamboo-based manufacturing enterprises (including industrial users, such as paper mills or bio-fuel producers and artisans), and the construction industry.

The multiple levels of traders involved in selling bamboo products each have different power levels, access to information, and ability to earn profits (UNDP 2018). Each stage of trading is typically based on informal systems relying on trust. Producers, collectors, and local traders usually have few selling options and low levels of bargaining power. They generally have to accept the prices offered by big traders. They can also sell directly to local entrepreneurs or large factories (e.g., paper mills) (Lund-Thomsen et al. *forthcoming*). Big traders have more access to external and local market information and have higher levels of bargaining power. Wholesalers, based in big cities, can be considered as key players. They decide their own terms of trade and also pay for transportation.

Bamboo that is grown outside of forest areas can also be sold in regulated markets (DAC&FW 2019). Options include the Agricultural Produce Market Committees (APMCs) and the e-National Agriculture Market (e-NAM). Furthermore, rural markets (haats) are being set up in conjunction with the programmes of the Ministry of Rural Development and state-based District Rural Development Agencies (DRDAs) to provide options for producers to directly sell their products to traders or industry. In addition, the Directorate of Marketing and Inspection (DMI), the DAC&FW, and state marketing boards provide support on prices and markets.

Bamboo produced in India can be used domestically or exported. In 2019, India exported less than one million USD of bamboo raw materials, while China exported 61 million USD, Viet Nam 7 million USD, Thailand 3 million USD, and Indonesia 1 million USD (INBAR 2021). A challenge in India is that a large amount of bamboo is estimated to be illegally exported to Bangladesh, Myanmar, and Nepal, which limits its benefits on the local economy (UNDP 2018).

Remarkably, despite its high levels of production, India imports large amounts of bamboo. In 2019, they imported 47 million USD of bamboo raw materials (INBAR 2021). To address this issue, public policy has been used to limit the entry of imported bamboo (Prasad 2020). This can benefit local producers as it creates a bigger domestic market. However, it can also create challenges for bamboo users due to higher bamboo prices and potential difficulties with accessing bamboo with their required quality requirements. Demand related to quality requirements can be a driver for encouraging Indian producers or entrepreneurs to develop products which can directly substitute the imported bamboo.

Growing and Trading Bamboo in Assam, Odisha, and Jharkhand

Bamboo growing processes differ across states. These differences shape the quality and availability of bamboo as a raw material for artisans. Three key bamboo producing states are Assam, Odisha, and Jharkhand. Each can be seen to have different dynamics in their production systems.

In ***Assam***, Bamboo is available year-round. However, supply is lower in the rainy season. At this time, bamboo is harder to harvest, can absorb water which can lead to cracking when dried, and culms have a higher starch content during this season, which attracts pests.

Forests in Assam are controlled by Autonomous District Councils (ADCs). Bamboo is also grown by individual households across the state in small-scale patches or home gardens. These small-scale cultivators sell their product for low prices. Bamboo aggregators are responsible for harvesting and act as intermediaries between farmers and local traders. Local bamboo traders buy aggregated bamboo from different villages and sell it to bigger traders. In addition, in a system promoted by the state forest department, bamboo is grown in joint forest management committee (JFMC) plantations that are owned by the committee, which manage harvest and sale. Available bamboo mostly comes from ADCs, bamboo development agencies (BDAs) and homegrown production. Harvesters collecting from forested areas often do not have training and collect easier to access bamboo which is not the best quality. In some cases, harvested bamboo is moved through water-based transport from upper Assam districts, with the water acting a basic treatment by removing starch.

Bamboo in Assam is sold through multiple channels. For example, bamboo bazaars in Barpeta town and Barpeta Road area sell bamboo to artisans. Also, in Nalbari, local traders sell bamboo at the doorstep.

Bamboo grows in forested areas of ***Odisha***, along with other crops that are harvested for human use with cutting and transportation processes regulated. Also, a small amount is produced in plantations by private cultivators and homestead growers. Key collectors are from the Odisha Forest Development Corporation (OFDC) or Vana Surakhya Samiti (VSS), a local organisation. A public committee regulates collection and trade of bamboo in Odisha, including deciding yearly prices.

While previously bamboo was often sold to paper mills, in recent years, demand from the paper industry has reduced as major producers have closed or changed raw materials. Most of the bamboo collected from forests is used by artisans for basketry, other local utility products, walling, and fencing.

In 2018, the NBM began to work with the Forest and Environment Department and the Odisha Bamboo Development Agency (OBDA) to enhance bamboo production and connect farmers with market opportunities. The project also supports pre-processing and businesses making products from bamboo. The OBDA and the National Bank for Agriculture and Rural Development (NABARD) are also promoting bamboo propagation and cultivation in forest areas and on private land.

In ***Jharkhand***, bamboo is grown on different types of land. In some cases, it is grown by households on land that is not suitable for agriculture. In addition, some bamboo plantations have been developed on agricultural lands. In Baheragora, Chakulia and Dhalbhumgahr blocks of East Singhbhum, bamboo is cultivated as a cash crop providing a major source of income for villagers. Bamboo in Jharkhand is consumed by households for domestic uses, local small-scale artisanal producers, and paper mills.

These states each have opportunities to produce increased levels of bamboo. Particularly, opportunities exist for growing bamboo on wastelands. Increased bamboo production can have ecological benefits and also provide a raw material to support industrial development through participating in value chains. Additionally, human intervention during growth and increased processing after harvesting can help to produce higher quality bamboo for artisanal uses.

Sources: UNDP 2018; FMC 2019a, 2019b, 2019c; Government of Odisha 2018; Sarkar et al. 2019

2.2 Creating Artisanal Bamboo Products

Indian artisans make diverse products out of bamboo. Examples include basketwork, incense sticks, and furniture. These are often sold through the unorganised sector (Invest India 2021). This section discusses different aspects of creating bamboo products. First, key products and production practices are discussed. Second, producers' characteristics are considered. Third, sales channels are identified. Fourth, key governance dynamics are explored.

2.2.1 Artisanal Products and Production Practices

Producing bamboo products can involve multiple stages (see: Gnanaharan and Mosteiro 1997). Primary processing involves turning the harvested poles into pieces that are suitable for further uses. In some cases, secondary processing is carried out, which can involve bleaching or dyeing. Finally, finishing can involve processes such as smoking or lacquering.

To be able to engage in artisanal bamboo production, access to bamboo is crucial. Some artisans are able to grow their own bamboo, others collect it themselves from forests or plantations, and others buy it from local traders. For artisans who need to collect bamboo themselves, proximity to a source can be a factor shaping their level of access (Lund-Thomsen et al. *forthcoming*).

Before making an artisanal product out of bamboo, primary processing must be carried out. This can involve shearing and splitting to form strips, splits, and slivers. These activities are often done using hand-tools in households or shared small-scale operations (Lund-Thomsen et al. *forthcoming*). The bamboo can be straightened or curved with heat being applied along with mechanical implements. In addition, bamboo can be flattened or chipped. The parts of the bamboo that are not used for artisanal production can be used to make other products, such as charcoal.

Primary processing can be done by the artisan who will make the product or the artisan can buy bamboo that has undergone some stages of primary processing. The nature of bamboo, being lightweight and having a linear-splitting nature, makes it easier to process than timber. Consequently, it is easier for farmers, including many women farmers to carry out primary processing, which increases their share in value addition (UNOSSC and INBAR 2017).

Bamboo products produced by Indian artisans can take various forms, which involve different production techniques. Some examples include:

- Bamboo sticks – used to make incense sticks or woven blinds
- Slivers – woven to make traditional baskets, other utility products, or handicrafts, such as lampshades; or woven into sturdy sheets to make tree guards or mats (used as an intermediary product in making industrial boards or tiles by secondary processors, or bundled to be used for roofing, partitions or doors)
- Poles – used to make furniture or scaffolding or horticultural supports

2.2.2 Producers

Artisanal bamboo production is often carried out at the household level. Indian Bamboo artisans often live in remote villages and experience high levels of poverty (UNDP 2018; FMC 2019a, 2019b, 2019c,

2019d). Many of these artisans are current or previous migrants (I29). Many producers do not own land. Bamboo products are often made to serve domestics purposes and access to markets is often limited.

In some cases, bamboo artisans leave the industry to take other jobs. Job opportunities in some bamboo communities are scarce and available jobs can be high risk. Notably, cases have been identified where former bamboo artisans ended up in situations involving bonded labour (I29). Also, some artisans continue to make bamboo products at home in conjunction with having other forms of waged employment.

A lot of artisanal bamboo production is created by women-owned micro-enterprises (Lund-Thomsen et al. *forthcoming*). Women often produce bamboo products at home, in conjunction with other household duties. Opportunities for these women differ based on whether they are located in urban or rural settings. Urban locations give easier access to education and support systems, as well as markets (Lund-Thomsen et al. *forthcoming*). Interviews with female artisans showed limited employment creation outside of individual households. When jobs were created, they often involved hiring extra help for a few days during the year.

While micro businesses predominate, small numbers of larger businesses have developed. As will be discussed further in Chapter 3, collaborative production creates opportunities for job creation. Artisanal bamboo production in India does involve instances of collaboration between small-scale producers. Diverse forms of cooperation can be identified, which include participation in self-help groups (SHGs), cooperatives, and producer companies.[10] In some cases, these collaborations have been set up through external interventions and rely on ongoing support from a third-party actor (I20).

Indian bamboo artisans collaborate in different ways. Production sometimes takes place in small-scale workshops, that can be women-run (Lund-Thomsen et al. *forthcoming*). It can also involve individual artisans contributing to the production of items intended to fulfil larger orders that are coordinated by an intermediary. Additionally, it can involve shared procurement of inputs. FMC has been working to promote diverse forms of cooperation.

2.2.3 Key Sales Avenues

A major way that bamboo artisans sell their products is through local traders. These traders, who include both men and women, can sell the products at local markets, small shops or roadside outlets (Lund-Thomsen et al. *forthcoming*). In some cases, the value chain is much longer. Local traders can sell to middlemen, who then sell to wholesalers (FMC 2019d). When producers are relatively isolated and selling to traders, they may lack information on prices and sell at prices that are too low. They may also lack information on end markets. However, they may have channels through which they receive information, such as through the traders. Overall, when many intermediaries are involved, prices being received by the artisans tend to be lower.

Production can also be made to fulfil orders from traders. Traders that make orders at the village can give partial payments in advance (I40). For these custom orders, sometimes aggregators take the orders from larger buyers, arrange for artisans to carry out production, then deliver the items to the buyers (Lund-

[10] These collaborative forms are discussed further in Section 3.2.1).

Thomsen et al. *forthcoming*). These buyers can be retailers or larger scale traders. In some cases, traders can buy semi-finished products and then finish them and sell them to other traders (I46). For example, this takes place in Meghalaya and Tripura and involves processes such as adding varnish.

In other cases, artisans sell their products directly, such as through setting up market stalls (FMC 2019d). In such cases, they receive the retail prices of the product and have direct connections with end consumers. Fairs and exhibitions can generate retails sales but can also be opportunities to make contacts for wholesale orders (I36). In addition, some producers are selling their products online or have online sales facilitated through a third-party, such as a social enterprise. This is an emerging option with high levels of potential, which is discussed further in Chapter 3.

Some artisans have developed businesses which produce directly for more distant buyers. Connections can be facilitated through online mediums, such as social media. These businesses produce custom orders for such clients, which can include Indian retailers and individuals (e.g., custom furniture).

In a few cases, artisanal bamboo value chains have more powerful lead buyers. Larger organisations at the top of Indian bamboo value chains include Ikea India, a Swedish retailer, FabIndia, a national retailer, Bamboo India, an Indian social enterprise, Shillong Bamboo, an Indian trading company, and various Indian government agencies. When artisans produce for such buyers, designs with detailed specifications are agreed upon in advance.

2.2.4 Key Governance Interventions

Diverse forms of governance and support initiatives have been developed in relation to bamboo value chains in India. Support programmes carry out various types of activities. For example, they range from skill building to acting as intermediaries in the marketplace to supporting access to financing.

A number of global organisations have run programmes and projects intended to support bamboo value chains in India. Examples include the Asian Development Bank (ADB), United Nations Industrial Development Organisation (UNIDO), and the Japan International Cooperation Agency (JICA). A key global actor involved in supporting the bamboo industry is INBAR, an intergovernmental development organisation, with 48 member states, that promotes environmentally sustainable development using bamboo and rattan. With its Secretariat headquarters in China, INBAR has a Regional Office in India.

In addition, diverse forms of national-level governmental and non-governmental initiatives are being run. Some of these are in coordination with global initiatives and others are domestic. Furthermore, a number of initiatives have also been developed at the sub-national level. Some of these are regional, with several focused on the North East Region, which is a major producer of bamboo. A list of key governance actors and initiatives operating bamboo-related initiatives is provided in Annex B.

As discussed above, the FMC project runs across nine states focusing on providing a broad range of support to clusters of artisanal bamboo producers. In each state FMC works with a variety of partner organisations to help to create enhanced market opportunities for the artisans.

Artisanal Bamboo Production in Assam, Odisha and Jharkhand

In ***Assam***, often entire families work on bamboo production. Many artisans make items to fulfil orders from traders or private buyers with individual orders requiring specific types of bamboo. Consequently, they keep an inventory of different bamboo types. Artisans often incorporate cane into the making of furniture, lampshades, trays, and handcrafted decorative items as a joinery binding material and stitching material. Cane is sourced from Shillong, Meghalaya or from local suppliers. A concern for these producers is that cane suppliers are at risk due to over harvesting without replanting.

Bamboo products made in Assam include furniture, trays, and lampshades. Packaging is typically old newspaper. Bamboo businesses can be divided into three types. One is household enterprises. The second is larger enterprises that distribute work to household enterprises. The third is traders that collect and aggregate products from household enterprises. Several SHGs operate in Assam's bamboo clusters and bamboo artisans are members.

Production processes are generally labour intensive with artisans typically using manual tools. Bamboo is often treated to help with preservation. Problematically, low-cost treatments that can be harmful for human health and the environment are common.

Demand for bamboo furniture is high. However, artisanal production can be slow and does not meet this demand. A number of key challenges can be identified in Assam's bamboo cluster. These include a lack of entrepreneurial ability, limited market reach, weak local governance system, inadequate financial linkages, limited access to advanced equipment, slow production methods, limited managerial capacity, challenges with occupational health and safety, use of a small range of standard designs, high cost for some species of bamboo that are not available locally, lack of adequate storage space, lack of awareness of market requirements, and low-quality finishing procedures. Another challenge is that younger people are not interested bamboo work.

Additionally, a number of challenges can be identified with reaching potential customers for bamboo furniture. These include some potential customers perceiving bamboo furniture to be low quality and old fashioned, potential urban customers being far away with high transportation costs and high risk of damage during transport, artisans being reliant on small group of traders, customers wanting more diverse designs, and a lack of showrooms. Furthermore, while many artisans have received training from previous programmes, they have often learned to produce products and designs that do not match current demand.

Seeking to address gaps, FMC's project has been active in Assam. In 2021, FMC supported six Assamese start-ups. These include companies producing bamboo recliner chairs, baskets, umbrellas, and mats. With the support of multiple training programmes, some Assamese producers are developing their businesses and have created workshops with multiple waged employees and are able to sell their products to urban consumers through trade fairs and online retail.

Bamboo artisans in ***Odisha*** are typically landless or have small amounts of land where they engage in homestead cultivation. Some artisans rely on nearby forests for collecting bamboo. However, forest reserves have decreased in recent years, requiring artisans to travel further. Furthermore, forest policies place restrictions on collecting. However, in some locations (e.g., Banjibahal and Jamut) rights have been given to a local group (VSS), which sells bamboo to artisans. Alternately, artisans procure bamboo from aggregators, who collect it from local growers, and sometimes from homestead growers who are not bamboo artisans.

In some cases, bamboo artisans cannot access adequate supplies of bamboo and cannot work. As a result, there have been incidences where they have accepted work from labour brokers who took them to neighbouring states to work in brick units with poor working conditions. In other cases, the artisans have been able to get access to illegal bamboo supplies. Illegal channels can involve buying from aggregators who have bribed forest guards or artisans collecting it themselves without authorisation.

Primary processing is usually done by the artisans. Poles are cut into the pieces based on the required dimensions of the final product. Then the bamboo is split to make slivers. This process is done manually and is time consuming. The slivers are then kept in the sun for at least another day to dry out. The slivers are then sometimes dipped in different colour solutions but the material is not treated. Artisans do not have exposure to scientific methods or assistive tools. Business development services are not available to support skills development in primary processing.

The slivers are used to make a variety of woven products, such as baskets. The artisans use manual equipment for manufacturing. Artisans have good technical skills but design development is lacking. Most products have little focus on finishing or design. They typically use local designs and motifs. DIC and OBDA have done some training on craft processes but these schemes have not resulted in new commercial endeavours. As with Assam, products focused on during previous trainings are not in high demand.

Most businesses are household based without any hired labour. Their primary occupation is basketwork but they also have secondary sources of employment such as waged labour in agriculture or construction. Both men and women are involved in production. Men are generally responsible for procurement and creating slivers. Women are generally responsible for weaving and colouring.

The Department of Industry plays a leading role in supporting financing. Diverse forms of financial support are available in Odisha. National banks are present and offer financial packages, which include MUDRA, Credit Guarantee Fund Trust for Micro and Small Enterprises, Stand Up India, and Start-Up India. Regional banks are also present, such as Utkal Gramya Bank, which can provide loans. In addition, schemes such as Silpi Unnati Yojona, the Prime Minister Employment Generation Programme, and OBDA subsidies are available. However, these schemes have not been connected to successful projects, often resulting in late or non-paying loans and creating a bad reputation for artisans. Overall, artisans have low levels of financial literacy and limited experience with banking practices, which can be a reason for non-payment. Micro finance institutions also operate in the cluster, which have higher repayment levels due to their robust follow up systems.

Artisans usually sell to local traders who facilitate sales at local markets with about 90% of production collected by local traders at the doorstep. Local traders aggregate production from artisans and supply big traders at urban markets or sell in local markets. Additional sales are made in neighbouring states at the time of puja or during festival season. During these times, products receive higher prices. Some production based on training received is sold at state level expositions (melas). Overall, supply to the national market is almost non-existent.

An example of a cooperation within a producer group can be found in Laumal. For large orders to the female only producer group in this village, artisans that have the needed skills contribute and receive payment proportional to their level of production. In this community, 30 of the 70 bamboo artisans have been trained to make modern products.

Valuable state-wide support is being provided by the Odisha Livelihood Mission and Odisha Rural Development and Marketing Society, as well as DICs and other support institutions. FMC has also run training that introduced artisans to the production of lifestyle products demanded by urban buyers. Additionally, FMC helped a group of artisans to obtain a government contract to produce bamboo tree guards, an item they used to sell to traders with very low margins. Also, FMC's project facilitated air cooler sales to other states and connected with the forestry department to set up sales of baskets for storing bidi leaves. Additionally, FMC has helped to support artisans to obtain loans.

Bamboo is widely available in ***Jharkhand****, which is a predominantly tribal state*. Artisans often procure it from farmers or have their own small plots. In some cases, artisans trade traditional bamboo products for bamboo. Bamboo artisans in Jharkhand make diverse products. These include mats, trays, baskets, and musical instruments. Bamboo shoots are also consumed in food products, such as chutneys. There is demand in the local market for bamboo products but prices are low. Prices and demand go up during the festive and wedding season. Production levels vary across the year based on demand and the agricultural season.

Jharkhand has an estimated 20 cane and bamboo clusters. Local bamboo artisans often face several challenges, which include being from vulnerable communities, not owning land, and having limited resources and access to production technology. They also lack access to uniform bamboo supplies with material quality limited by poor harvesting techniques and lack of treatment. These challenges contribute to lower quality products, an issue which is made worse through a lack of modern management techniques, including quality control. Additionally, they lack information about market trends and do not produce higher value-added products. Furthermore, access to finance is difficult without collateral. Loans are mainly available from non-banking financial companies (NBFCs) and moneylenders who charge higher interest rates than national banks.

Jharkhand's producers currently receive support from the NBM, Jharcraft, and TRIFED. Also, FMC has been working with ESAF, an organisation that has been active in supporting bamboo artisans for over a decade. Through this programme, in conjunction with the Rural Self Employment Training Institute (RSETI) programme, some artisans have developed advanced skills and have been able to develop their own businesses to sell to Indian urban consumers directly. Additionally, ESAF runs a common facility centre (CFC) that takes large orders from public and private national and international buyers (e.g., Ikea, Fabindia, private traders, Jharcraft, and Khadi & Village Industries Commission) as well as through online retail (e.g., Flipkart and Amazon). Customers are found through trade fairs in India and abroad. The CFC develops moulds to assist the artisans to make consistent sized products and provide artisans with bamboo. The production system involves artisans doing the initial production stages and finishing taking place at the CFC to ensure high quality final products, storage and packaging. The CFC also has an in-house design team and hires design consultants. In addition to the use of moulds and frames, quality control involves master artisans working in villages and a central quality control team at the CFC. The CFC also has a compliance team and producers are subject to unannounced audits and need to show traceability of raw materials for some international buyers.

As can be seen in these three states, local circumstances differ across India. Artisans typically make complete items at the household level. All have local markets, but some are connected to more distant buyers. In some cases, multiple households can contribute to creating products for one large order. Collaborative production in Jharkhand is geared towards production for higher-end standardized products. This development has followed many years of training and involves the assistance of a well organised CFC that manages relationships with large scale global buyers. Production systems also share multiple common features, such a lack of knowledge among artisans of design demands of urban buyers.

Sources: UNDP 2018; FMC 2019a, 2019b, 2019c, Various Interviews

2.3 Key Strengths and Weaknesses of Bamboo Value Chains in India

Artisanal bamboo production in India has a variety of strengths and weaknesses. These can be considered at the level of producers' businesses. These can also be considered at the level of the ecosystem that surrounds production, including the production of bamboo as an input. Key strengths and weaknesses are outlined in Table 2 and discussed in further detail below. The discussion in this section also covers highlights of FMC's support for bamboo artisans in relation to addressing weaknesses. Overall, this section presents a snapshot of the current situation facing bamboo artisans.[11]

Table 2: Strengths and Weaknesses of Artisanal Bamboo Production in India

Elements	Producers' Strengths	Producers' Weaknesses	Production Ecosystem Strengths	Production Ecosystem Weaknesses
2.3.1 Socio-Economic Situation	• Some own land • Engage in diverse livelihood strategies	• Some do not own land • Lack of occupation-al health and safety (OSH) equipment and protocols • Lack of sufficient safety nets • Many from low-income households or other vulnerable groups (e.g., Scheduled Castes and Tribes) • Often located in relatively isolated communities	• Availability of welfare schemes (e.g., ration cards) • Availability of insurance schemes • Availability of bamboo • Sustainable cultivation practices • Opportunities to learn bamboo craft skills	• Formal jobs are often in low supply in remote regions where artisans are located • Limited availability of OSH training and equipment • Bamboo considered as one part of multiple livelihood support system • Gender norms shape opportunities
2.3.2 Skills	• Traditional artisanal production skills and designs	• Lack of advanced technical skills • Lack of quality control and consistency • Low productivity • Lack of management and administrative skills • Lack of innovation	• Tradition of family-based training • Diverse training programmes have been developed	• Some training programmes promote practices that are not aligned to market demand • Lack of impact of training • Weak innovation systems
2.3.3 Capital	• Some knowledge of and access to financing schemes	• Lack of equipment • Lack of finance	• Diverse financial services exist	• Lack of promotion of options • Lack of financial training for artisans • Gender shapes access to finance

[11] Policy recommendations that can provide support to producers by shaping the production ecosystem to harness opportunities and address weaknesses are provided in Chapter 4, after Chapter 3 discusses options that are available for producers.

Elements	Producers' Strengths	Producers' Weaknesses	Production Ecosystem Strengths	Production Ecosystem Weaknesses
2.3.4 Business Models	• Some producers are working with collaborative models	• Lack of cooperation • Not harnessing potential revenue streams from waste • Weak positioning in value chains • Often unregistered household-based units producing low volumes • Often sell products for low prices	• Some programmes developed to support collaboration • Some business training programmes are available	• Limited reach of programmes promoting collaboration • Pressures from norms and traditions support the persistence of inefficient business models
2.3.5 Connections to Markets	• Ongoing connections to local traders	• Poor awareness of market opportunities and demands	• Some interventions provide information about markets • Growing middle class in India has growing demand for household products • Demand for sustainable products • Demand for craft-based products	• Lack of widespread information sharing related to potential markets for bamboo products • Poor perceptions of bamboo products among many potential buyers in India • Preferences for other materials among potential buyers • Competition, including from producers creating industrially manufactured bamboo products and products made from alternate materials • High variation in seasonal demand in local market
2.3.6 Logistics Systems	N/A	• Insufficient storage space	• Policies to improve logistics infrastructure • Emergence of dynamic national e-commerce delivery networks	• Underdeveloped logistics infrastructure • Lack of high-quality logistics service providers
2.3.7 Inputs	N/A	N/A	• Abundance of bamboo	• Deficiencies in bamboo cultivation • Post-harvest treatment deficiencies • In some regions, periods with deficiencies in bamboo availability • Lack of business service providers • Lack of equipment providers
2.3.8 Overarching System of Governance Initiatives	N/A	N/A	• Wide variety of support programmes • Cooperation between bamboo interventions is growing	• Programmes do not have the capacity to directly reach and provide support to all bamboo artisans • Insufficient coordination across programmes • Repetition

Source: Author

2.3.1 Socio-Economic Circumstances

Many bamboo artisans are highly vulnerable. Many are from low-income families and/or traditionally disadvantaged groups, such as Scheduled Castes and Scheduled Tribes. Many are working in remote regions with few formal job options. While some own homes and plots of land, others are landless.

To address the challenge of low and unstable income, many engage in multiple livelihood strategies. Often, artisans need constant orders, or they will take jobs as labourers (I33). Some artisans are moving to unskilled labour, such as transport, because they do not have demand for their artisanal skills. In these cases, some still try to produce in the evenings and weekends (I41). For young people, bamboo is often not seen as an aspirational job (I42).

Additionally, some social security provisions are available through government programmes, such as ration cards. A challenging dynamic for vulnerable artisans is that if their incomes rise above the level where they have access to public services, they can lose their access. With knowledge that increased income can be temporary and short term, artisans may be afraid to lose access to these support services (I23).

Furthermore, the artisans also face risks related to occupation safety and health (OSH). In many cases, artisans' production practices involve behaviours which put them at risk. Artisans can use practices that cause long-term health issues, have potential for workplace accidents, and involve exposure to toxic substances. One issue is that if artisans store products in small homes, toxic vapours from chemical treatments leach into living space (I46).

To address these vulnerability-related challenges, FMC has been working to provide artisans with OSH training and getting increased social security. This has included running workshops. It has also involved identifying appropriate insurance policies and promoting them to artisans through public campaigns in their local languages.

In many artisanal communities it is common to learn how to make products from bamboo, whether for domestic use or for commercial purposes. Additionally, many small landholders grow bamboo on small patches of land. However, as bamboo is just one element of artisans' use of multiple livelihood strategies, they may not invest sufficient resources and efforts into developing their bamboo businesses in ways that could make them grow.

A strength of the production ecosystem is that sustainable bamboo cultivation practices are common. This helps to ensure that bamboo production does not degrade the local environment. Relying on sustainable production systems allows artisanal producers to healthily live alongside areas of bamboo production.

Finally, another challenge can be found in the gender norms surrounding bamboo product creation. Based on gender norms, women can have different opportunities than men when it comes to upgrading their bamboo businesses (Lund-Thomsen et al. *forthcoming*). For instance, in some cases it is perceived as dangerous for women to collect bamboo from the forest.

2.3.2 Skills

India's bamboo artisans possess specialised skills and have traditions of making products with diverse aesthetically pleasing designs. Many artisan communities have family-based training systems. Through these systems, traditional techniques are learned by the artisans. These craft-based production skills are an asset for these producers. However, there are number of skills that are lacking.

Low productivity is one challenge. As production is often done at the household level, economies of scale are not utilised. Additionally, sometimes the manual processes that are used are slower than using alternative technologies. Another issue is, as mentioned above, that artisans often engage in multiple livelihood support strategies, of which producing bamboo products is just one element (Lund-Thomsen et al. *forthcoming*). This arrangement contributes to low levels of productivity.

A further skill-related challenge is that some products are low quality, which can make them less appealing to potential buyers. Artisans often lack awareness of and ability to improve the quality of their products. Additionally, they may be unable to make products that require higher skill levels. Another issue is that product consistency is often lacking. This is not necessarily a problem for all buyers but can be a problem, especially if some items do not meet minimum standards for a particular use. For example, when a government initiative tried to facilitate sales through Amazon, products were rejected because they changed colour in a few weeks (I26). Quality challenges are driven through lack of exposure to advanced production techniques, lack of access to more sophisticated equipment, reliance on traditional practices, and the quality of bamboo that is being used. As mentioned above, craft-based techniques can be an asset but at times can benefit from the incorporation of more advanced processes that can improve quality and increase speed.

In addition to deficits in skills related to production, artisans also often lack management and administrative skills. A skill that is often lacking for informal producers is record keeping in order to keep track of time, costs and earnings. Lack of management skills can be a serious detriment for bamboo businesses. In some cases, artisans produce products that are sold for prices that do not cover production costs (Lund-Thomsen et al. *forthcoming*). Furthermore, local traders have reported that artisans will fail to keep commitments to produce items that are made-to-order (Lund-Thomsen et al. *forthcoming*). This lack of reliability can create barriers to business development.

Another weakness is lack of innovation. Artisanal products are often based on local standard designs and use traditional production techniques. Producers often do not engage in experimentation that could make their products stand out against competition, provide enhanced benefits, or require simpler production practices. This may be related to the weak innovation systems that characterise where producers are operating (Das 2015). Drivers for these challenges can include lack of exposure to alternate methods of production and lack of connection with diverse potential users.

Among bamboo artisans, a small number have been developing innovative ideas and a small number have a strong entrepreneurial drive (I35, I48). Some of these artisans are developing more successful businesses through creating new designs and finding new ways to reach customers, such as using social media. An example of innovation taking place is that the Nagaland Bamboo Mission is coordinating production of lightweight stackable products (I42).

Attempting to address these various skill deficits, a variety of training programmes have been developed by diverse governance actors. These range in scale and scope. A challenge with many programmes is that

they are not aligned with available market demands. Also, in some cases, artisans have taken training but do not apply the techniques that were taught. Working in collaboration with multiple governance actors, FMC has been seeking to provide relevant training programmes across their 9 target states. Topics have included advanced production techniques and financial literacy. Additionally, to promote innovation, FMC, along with Finovista and enabled with the support of the Office of the Principle Scientific Adviser (PSA) to the Government of India, ran the National Bamboo Innovation Challenge 2022, which was intended to develop business opportunities in the bamboo industry. As this initiative is ongoing at the time of publishing this report, its impact is yet to be assessed.

Being able to produce for the rapidly changing needs of urban consumers requires continuous, long-term skilling and upgrading of the artisans (I39). Multiple agencies conduct training for artisans. These include DC Handicraft, KVIC's Multi-Disciplinary Training Centers (MDTCs) and RSETIs. Artisans considering taking training can want a stipend to attend, which is a challenge (I37). Consequently, demand for training is low. For example, RSETI has to seek out artisans for their free programmes because demand is low (I37).

For the artisans with stronger entrepreneurial drive, opportunities for training have been taken. Some successful artisans have taken multiple trainings. For example, a female artisan in Ghasipur, Dumka, Jharkhand has had 5 to 6 trainings and completed 2 RSETI programmes (I38). She is part of an SHG and plays a supervisory role. She monitors 15 village level groups with 10 to 15 members in each. With support from her leadership, her village now makes and sells modern products to diverse urban buyers. Another male artisan in Shimla, Deoghar, Jharkhand had his first formal training facilitated by ESAF over 10 years ago and has had 4 or 5 additional trainings from different agencies, such as DC Handicraft and Jharcraft (I40). He now produces modern products with customised designs for buyers in multiple states.

However, overall, skill upgrading programmes face multiple challenges. Artisans are slow to learn new techniques. They often do not pay attention to the details. Only 1% or 2% will make a product that matches a model, and even then, those may be poor quality (I29). One challenge is that female artisans often have household obligations that do not give them time to engage in skill upgrading activities (I29). They focus on traditional products that sell for low prices and do not realise the opportunity to earn more, which could be achieved if they learned to make new products. Another challenge is that if trainings focus on products without already available markets, it can be too risky for the artisans to focus on making these products (I29). Nevertheless, as described above, some training programmes have been successful. A notable innovation being used by ESAF in Jharkhand in that artisans are given moulds and frames to ensure products are a consistent size.

2.3.3 Capital

Many bamboo artisans work with very limited capital. They often use manual equipment that can be slower, more difficult to use, and less accurate than more advanced equipment. Additionally, a critical gap for producers is infrastructure. They lack storage and workspaces (I26). Artisans particularly struggle to store products during the rainy season (I33). When products are not stored properly, they can get dirty, and water damaged.

Another issue is that artisans often have very limited working capital. Because of a need to have immediate sources of money, artisans often make something one day and then sell it the next day. They do not save the products until they could get a better price, instead they just sell to any trader for low

prices (I29). If they had higher levels of working capital, they could wait and sell their products at better prices.

Multiple options exist for getting access to increased financing. As can be seen in Annex B, multiple financial services exist which can provide support to bamboo artisans. Through these options, artisans can get loans for equipment or working capital (I34). However, many artisans have low familiarity with getting formal sector loans. They are often unaware of the financial services that are available and they are not familiar with the processes they would need to obtain a loan. FMC has been working to address this challenge through their financial literacy training.

A further challenge is that many bankers have had limited to no exposure to providing loans to artisanal bamboo producers. The industry has been perceived as being the domain of people from marginal castes and other low-income families, which has deterred investment from many potential investors, such as large enterprises and bankers. To tackle this problem, FMC has engaged in activities intended to sensitise bankers to the bamboo industry's high levels of potential.

FMC with its facilitating agency partners also helps artisans to access loans. In Odisha about 60% of artisans now get approved for loans (I29). At first, only 5% to 6% were approved. The project helps artisans to prepare business plans and get the required paperwork, such as a bank account details (in some cases artisans did not have bank accounts or had accounts that had become inactive) and proof of address. In carrying out this work, the interventions focus on the artisans who seem to have potential (I29).

Notably, as of 2022, FMC's bamboo project has enabled INR 243.10 million (3.42 million Euros) in credit mobilisation. This investment was made up of credit from banks/microfinance institutions/NBFCs worth INR 193.35 million (2.72 million Euros) that was provided to 1,399 enterprises. Additionally, the bamboo enterprises, themselves, also invested an estimated INR 49.70 million (0.70 million Euros).

In addition to FMC's work, other organisations working with bamboo artisans are providing support with getting loans. In some cases, artisans' loans are subsidized by the MSME Ministry (I28). RSETI is one organisation that helps with loan applications (I34). People who have taken RSETI programmes get Enterprise Development Programme (EDP) certificates, which are necessary for receiving loans through the Prime Minister's Employment Generation Programme (PMEGP).[12] Another option for artisans is Mudra loans (I34).

If artisans have past defaults, they cannot get loans but if they have no credit history, they are usually approved (I34). Artisans who repay loans can get bigger loans (I34, I35). In some cases, gender can also shape access to finance. For example, land ownership can be used for collateral for potential borrowers. However, ownership is often inherited by male family members. This limits women's opportunities to borrow (Lund-Thomsen et al. *forthcoming*). On the other hand, some lenders prefer to give to women as they are perceived to have a higher chance of repaying loans (Lund-Thomsen et al. *forthcoming*).

Often artisans have increased options for loans if they are working in groups. For instance, the National Rural Livelihood Mission initiatives have involved promoting the creation of SHGs and producer groups that have facilitated systems that enable informal communal savings and loan systems. The National Rural Livelihood mission also facilitates external loans for SHGs. This is an effective system with the group ensuring the loan is paid back (I34). These SHGs are formal entities but do not need legal registration or need to have collateral for the loans. There are multiple programmes in India where artisans are given

[12] EDP training is also provided by other public sector training programmes.

loans through joint liability groups. In these groups, they are all liable to pay so it does not matter if one member cannot pay, the group pays (I35). Participation in these groups can help artisans to build their own credit.

Additionally, groups of artisans can get additional forms of funding. For example, in Assam, SHGs operate in village organisations that are part of cluster level federations (CLFs) (I46). These CLFs can get government funding.

Another option for financing is private investment. Small examples of this can be found. In Odisha, ORMAS wants to connect artisans with Indian entrepreneurs who will invest in production (I26). In Assam, an entrepreneur is exploring developing a CFC that will be run as a social enterprise.

In addition, some programmes seek to directly help artisans get access to better equipment and storage facilities. For example, in Odisha, ORMAS is working on arranging for new storage facilities. These will be built through the National Rural Employment Guarantee Act (NREGA) programme (I26). FMC and its partner organisations have also helped artisans to get access to various types of production equipment.

A key activity that artisans can engage in to gain access to increased capital is collaboration, either through loans, as described above, or though other methods, such as joint procurement. External interventions, such as FMC's support have helped to obtain equipment that is intended to be shared by groups of artisans. A key way that artisans can get access to shared equipment is through CFCs. For example, in Jharkhand, ESAF allows artisans to used CFC equipment for ESAF orders and rent it for personal work.

2.3.4 Business Models

Bamboo artisans often work as household-based businesses that generate very low earnings. Their main customers are local traders that come to villages. These artisans are used to getting paid daily based on the day's production (I33). Many of these businesses are not registered and do not engage in any branding. FMC has encouraged household-based businesses to create names for themselves to help with promotion. This activity has had impact but still many of these businesses are not registered (I30). These household-based units usually subcontract work if they get a big order (I37) and, in some cases, they hire people for extra help a few days a year (I3, I4, I8, I9).

In some cases, producers are working with collaborative models, such as using shared facilities and participating in formally organised collaborative models (e.g., cooperatives or producer companies). Such models can help them in numerous ways, which include achieving economies of scale, creating development opportunities, and increasing their power (see: Section 3.2.1). Helping to harness these opportunities, FMC has been involved in supporting 68 formal producer networks and many more informal producer networks.

Collaboration can take multiple forms that are informal and formal. An example of informal ~~form of~~ collaboration is when artisans ~~can~~ physically work together in the same place, which can help increase their productivity (I38). One form of more formal collaboration can be found in producer groups. This is a type of collaboration that has been promoted by interventions such as those run by the National Rural Livelihood Mission. In some cases, these producer groups can be registered businesses which directly receive payments and register for taxes. A larger and more formal form of collaboration can be found in Producer Companies (see discussion on Organisational Forms in Section 3.2.1). These are companies that

can be made up of multiple producer groups. In these larger collaborative business models, artisans can rely on people with specialized skills, such technical or accounting competencies (I24). Multiple organisations that run interventions targeted at bamboo artisans encourage group formation.

While most units are household based, some larger units exist that have paid employees. These employees can be a combination of permanent and seasonal workers (I43). For small units, employees can be people who help with production who have traditional bamboo working skills.

A weakness of many business models is how bamboo resources are used. Artisans often consider parts of the bamboo as waste. For example, when making sofas, less than half of bamboo poles are used and artisans often use the remaining portions as fuel or for household fencing. However, these items, which include bamboo knots, fibres, and dust could be used for making by products such as bamboo charcoal, or packaging material (FMC 2019a). Not using components of bamboo and treating them as waste means that producers are losing out on a valuable resource (Invest India 2021).

Another challenge related to business models is that bamboo businesses are often at the bottom of low-cost value chains. A particular difficulty is that they often connect to these value chains through a series of intermediaries. The structure of these existing business relationships can limit bamboo businesses' opportunities to develop.

In some cases, artisans who have received training on making products for new markets are connecting with different value chain structures. However, these artisans often continue to divide their production time between creating traditional items for traditional buyers and creating new designs for new buyers. The models they use for their businesses can vary for each of their product lines. Specifically, in addition to connecting to multiple value chains through a diverse set of buyers, differences can range from the supply chains for bamboo inputs (I32) to how the products are stored and shipped (I40).

A further challenge, which is driven by pressures in the ecosystem, is that common norms and traditions involve business models that are not very efficient. These pressures can originate from multiple sources, such as habits or maintaining ongoing business relationships. While new business models can provide benefits, including some that are being promoted by external interventions, instigating changes within existing businesses can be difficult (McKenzie 2021).

2.3.5 Connections to Markets

Market demands also shape the opportunities of India's artisanal bamboo producers. This sub-section discusses strengths and weaknesses of current connections. A more thorough discussion of market options and demands is provided in Section 3.1.

The main markets that bamboo artisans currently connect with are local. Seasonal variation in demand in local markets creates challenges for small bamboo businesses. Storing products between high seasons creates cost and risk, particularly related to damage that can occur during the monsoons. Additionally, these fluctuations effect income flow. As discussed above, these dynamics result in some bamboo artisans turning to other income generating activities based on the season (Lund-Thomsen et al. *forthcoming*).

In addition to the strong connections that exist between bamboo artisans and local markets, many longer distance connections are possible and are already developing. India is a very large country with a growing middle class. Notably, Indian urban consumers present a large group of potential buyers of household products. However, there are some challenges related to the potential for this group to buy bamboo products. Within India, there is a perception that bamboo is a low-quality material that is not durable (UNDP 2018; Invest India 2021). For perceived quality reasons, some consumers prefer to buy products that are made out of materials other than bamboo, such as plastic or metal. One of the interviewees described that some people prefer plastic over bamboo as they perceive it to be more durable (I18). Also, in some cases, consumers prefer traditional wood products over bamboo (UNDP 2018; Invest India 2021). Furthermore, prices can be cheaper for mass produced items made from other materials. Moreover, other bamboo producers, notably in China, have bamboo industries that can often produce products more cheaply and with more consistent quality than Indian producers. Overall, facing competition with other producers is a key challenge for bamboo artisans.

Despite these barriers in consumer perception and existence of competing products, there are also factors creating increased demand for artisanal bamboo products. Notably, there is growing worldwide demand for products that are perceived by customers to be sustainable. This can include environmental and social issues. As environmental challenges are of increasing concern around the world, bamboo presents a potential solution for many of these challenges. Using bamboo to make products has a variety of environmental benefits. One is that the act of growing bamboo can provide positive environmental impacts (see Section 1.1). Additionally, bamboo products that are created using environmentally friendly processes can replace other products with negative environmental impacts, such as plastics. Furthermore, buying products from traditional bamboo artisans helps to support vulnerable communities and supports the sustainability of traditional cultural practices. Notably, for some customers, the fact that a product was made using artisanal practices using a natural material, such as bamboo, would be appealing.

Artisans' main connections now are to local traders. Artisans often do not know where products are sold after traders buy them (I25). Overall, bamboo artisans in India typically do not have much information about potential markets and the needs of those markets. Particularly, many rural artisans are not aware of market demands in urban areas or other global regions. Consequently, the types of products that are made and the design features that are incorporated can differ from those desired by potential customers.

Artisans can and are learning about market demand through multiple processes. One way that artisans can ~~also~~ learn about new product designs is through training programmes. Another forum for learning is through attending fairs and exhibitions. When displaying at an exhibition, customers come and give direct feedback. Meeting buyers lets artisans know their needs (I46). A further way that artisans are learning is through the internet.

Several bamboo initiatives are being run across the country that provide market information to participants. While many past interventions that have been intended to create connections between artisans and urban markets have missed their mark, there have been examples of success. FMC's project has been working to create practical and market relevant training. For example, FMC helped Promod Barange, an artisan from Madhya Pradesh, to incorporate modern designs that are appealing to urban customers. They also provided support related to communication and marketing skills. Assisted through FMC's intervention, Promod was able to move his business from selling at a regional market to having two shops located along a highway and to become an active participant at state level exhibitions. These

changes involved shifting from being a seasonal bamboo worker to running a full-time business. They have also resulted in a six-fold increase in his income.

FMC is also helping to make connections between producers and diverse potential buyers. FMC has been carrying out a variety of interventions designed to increase market linkages. Connections have been created through a variety of channels. At the local level, this has involved helping to connect new traders to clusters, which has increased the prices that artisans can receive for their creations. Artisans have been supported to attend various state and national level exhibitions, which provide connections to diverse buyers and valuable learning experiences. Additionally, connections have been made through online channels. These include developing Bamboo Link (https://thebamboolink.com), a website that helps with matchmaking, as well as helping artisans to register on the GEM portal, which allow artisans to be eligible for public procurement opportunities. When FMC makes connections to new markets that demand new products, artisans can make these products in the lean seasons and their demand is not tied to the cycles of demand for traditional products (I29).

A number of additional situations where new connection types have developed can be identified. For example, in Odisha, Aide et Action, FMC's facilitating agency, has promoted bamboo artisans to become local traders that operate within their own communities and sell products in different local markets (I29). FMC's project also makes connections between villagers and new traders that enable artisans to receive more money for their traditional products (I31). At a larger scale, ESAF's CFC in Jharkhand connects artisan to high end global value chains through directly providing a range of business support services, including facilitating communication with international buyers. Entrepreneurial artisans are also making use of online retail channels. This can include advertising their products on Youtube, Facebook, Whatsapp and local e-retail platforms (e.g., DeogharMart).

However, artisans can face a variety of challenges related to connecting to new markets. One challenge is that they can struggle to prepare orders on time (I24). Another issue can be transportation and time. If artisans want to sell their own products at local markets instead of relying on traders, they need to transport the items themselves, which may be by bicycle. Then they have to sit all day, and then bring back everything that does not sell (I38). Selling directly to designers and other larger scale buyers can also create challenges. Sometimes designers make requests that artisans cannot fulfil, and many times samples are developed but not bought in the end (I40).

A further challenge is that many government agencies are seeking to support Indian handicrafts through programmes that often result in good products but they do not have good connections to markets (I41). Government run showrooms in different states can have poor sales rates (I41). Developing public private partnerships for sales could be more effective. Additionally, products from these projects need to be better targeted at what consumers want. These show rooms have to compete with commercial shopping centres that provide appealing consumer experiences with high levels of choice. Meeting the needs of new markets can be difficult. For domestic organisations seeking to support bamboo artisans, knowledge of demands of export markets can be a particular challenge (I26). FMC is conducting ongoing research into potential bamboo markets.

2.3.6 Logistics Systems

A key challenge for bamboo producers is that, in many cases, transportation infrastructure is currently insufficient. Bamboo traders and artisans often transport their products by foot and passenger train. A bamboo artisan in Jharkhand described that, when he started selling contemporary products, he had many logistics challenges, particularly with packaging and supplying (I40). Now he packs modern orders in paper cartons bought from the market and traditional products in plastic bags. He transports products through bus courier using motorcycle to get them to the bus. Commercial shipping services can also be slow and items that are large and lightweight (such as some bamboo pieces) can incur high costs, despite their low weight (I42).

Furthermore, lack of sufficient storage facilities leads to high levels of product damage. As described above, many artisans lack adequate storage facilities where they carry out production. Options exist for developing higher quality communal storage facilities.

Government initiatives are in place to promote developments of roads, rail, and international freight networks, which include efforts to incorporate technology into supply chains and warehousing systems (Invest India 2021). In addition, NBM has been working with the Inland Ways Authority of India to help with shipping bamboo (Invest India 2021).

Also, e-commerce delivery networks have been growing across the country. India now houses 140 million online shoppers, which represents the world's third-largest base of online shoppers (Sheth et al. 2021). This industry is supported by logistics and communication networks that make it possible to efficiently deliver online orders. While many of these networks still have barriers with connecting to remote producers, the growth of these networks is creating opportunities for artisanal bamboo producers.

2.3.7 Inputs

A key strength in the ecosystem of India's artisanal producers is that India has an abundance of bamboo of different commercially useful species. It is a fast-growing crop that can be produced with a low investment. Consequently, with some key exceptions, bamboo artisans have ready access to bamboo supplies.

In cases with lack of supply, multiple factors can be responsible. One issue can be lack of sufficient storage, which can enable supply through seasons with harvesting limitations. Regulatory issues also affect bamboo supply (UNDP 2018). For example, bamboo grown on forest lands is classified as a tree and is subject to restrictions in use and transportation. However, a recent policy amendment (See Section 2.1.1) has meant that bamboo grown on non-forest lands has been given a different classification, which allows more freedom of use. Supply of cultivated bamboo has also been hampered in some places by various disincentives to grow bamboo. A key issue is that sales options often rely on networks of traders that contribute little value and leave growers with low levels of remuneration. Problematically, farmers often rely on traders to set prices. Furthermore, price volatility has discouraged bamboo production (UNDP 2018).

In addition, in some cases, while bamboo can be collected in local forests, artisans can face challenges with access (I29). In some cases, it is collected illegally by traders who pay bribes to forestry officials and sell it for high prices. While authorized artisans in theory can collect bamboo freely themselves, they need to have artisan cards, which not all of them have, and they need to have transportation. Also, it is

important to note, as described above, bamboo harvesting and trading systems differs by state. For example, in Odisha, an organisation called VSS gives bamboo to artisans for a nominal charge that could be considered as a user fee (I29). This system can save artisans a lot of time compared to collecting bamboo themselves, which they can use for expanding production.

Another problem is that the quality of bamboo can be low. Challenges for bamboo cultivators and collectors include poor production techniques and lack of research and development (Gupta 2021; Invest India 2021). A particular challenge is the low supply of high-quality planting material and weak linkages between nurseries and farmers (Jayaraj 2021). Problematically, some nurseries have been found to mix the seedlings of different species. To address this problem, states have started accreditation systems for bamboo nurseries (Jayaraj 2021). Additionally, bamboo is often not treated after harvesting, which can lead to degradation. Low quality bamboo can affect the ability to sell products in global markets, which require consistent quality and standardisation (UNDP 2018).

Some of the inputs for bamboo product creation, such as dyes and chemicals, are readily available in local stores and sometimes can be procured through the assistance of bamboo interventions, such as ESAF's CFC (I40). Additionally, artisans can use household materials such as tea and onion skins to create dyes (I40). However, artisans also face challenges related to the availability of other inputs, including both business development services and various types of equipment. To tackle this problem, FMC has been seeking to link service providers and equipment producers to the clusters in their nine target states. Additionally, as noted above, they have created and strengthened seven CFCs that provide services to local artisans, which are located in Jharkhand, Meghalaya, and Madhya Pradesh.

2.3.8 Overarching System of Governance Initiatives

Overall, the bamboo industry has been found to have weak cross sectoral synergy (Invest India 2021). However, several recent activities have involved increasing levels of cooperation. One has been the work of FMC at a national level and within the nine targeted states. Additionally, the new structure of the NBM involves coordinating actions across diverse government agencies. Furthermore, the India Bamboo Forum (IBF) was founded in 2020. The IBM has about 50 members focused on developing ways to promote bamboo, including developing a strategic road map. In some cases, bamboo interventions provide support for artisans to access existing services. For example, FMC's project in Odisha helps artisans to get artisan identity cards from DC Handicraft (I29). Moving forward, more room exists for better coordination and cooperation.

Finally, while many programmes exist that are providing direct support to bamboo artisans, these programmes do not have the capacity to directly connect with all artisans. Therefore, system change is necessary to create improvements that can be felt by all artisans. Coordinating interventions can help to reduce duplication of efforts and help to change the nature of the production ecosystem in ways that support all of the elements of production discussed above.

2.4 Conclusion

This chapter has provided an overview of artisanal bamboo value chains in India, including characteristics of producers and those of the ecosystems which support production. While production practices and

production ecosystems differ across the country, key strengths and weaknesses have been identified. Ways to harness the strengths and address the challenges discussed in this section are considered in Chapter 4. First, Chapter 3 identifies and assesses different potential trajectories that can be taken by India's artisanal bamboo producers.

3. Market and Value Chain Options

Many Indian artisanal bamboo producers are working in their own micro-enterprises and selling traditional products for low prices to traders or through local markets. In their current circumstances, there are a variety of options for these artisans to upgrade their businesses and create higher levels of employment. With their artisanal skills and large supply of Indian bamboo, these artisans have opportunities to expand their businesses in multiple directions. This chapter considers options within two dimensions of bamboo product value chains. The first set of options considered are related to target markets. The second set of options considered are related to how production is organised. The focus is on options that are possible for artisans to reach in the near future. However, pursuing any new opportunities will require learning and development among artisans. Chapter 4 outlines interventions that can help artisans develop their businesses in ways that can harness opportunities related to the options presented here.

3.1 Market Options

Artisanal producers can create a diverse range of bamboo products. These products have a wide range of potential markets. This section first provides an overview of some examples of products that are made by India's bamboo artisans and then considers a selection of potential buyers and their demands.

3.1.1 Bamboo Products

Examples of bamboo products that can be made by artisanal producers are shown in Table 3. Producers can sell basic version of each product or can add additional features to their sales offerings. For example, producers can develop a brand identity, add design details, obtain certification for standards (e.g., voluntary standards or standards required to access particular markets), advertise environmental attributes or personal stories, or add additional services. The examples of food items, charcoal, utility items and lifestyle products, and furniture are discussed in more detail below.

Table 3: Examples of Products Artisans can Make from Bamboo

Product Type	**Examples**	
Fuel	- Charcoal - Biofuel	
Consumables	- Food (shoots, bamboo rice) - Vinegar - Medicine	- Fodder - Biochar
Poles	- Scaffolding - Agriculture	
Handicrafts and Utility Items	- Utility items (e.g., brooms) - Straws - Jewellery - Woven products (e.g., baskets) - Cards	- Sticks (blinds, incense) - Lampshades - Trays - Magazine Holders
Larger Manufactured Items	- Furniture - Housing and construction material	

Food Items

Food products can also be made and sold by bamboo artisans. One option is eating the shoots in a fresh or preserved form. Another product that can be made is bamboo vinegar, a liquid derived during the production of bamboo charcoal (Invest India 2021). This can be used as a food additive and also in agriculture. A further food product that can be made is bamboo rice (mulayari), a product derived from bamboo shoots (Invest India 2021).

Food Product Example

Meira is an Indian company that has been successful in producing a bamboo shoot pickle. The company was founded in Imphal East, Manipur in 2004 by a female entrepreneur, Hanjabam Shubhra Devi, who was a member of the Association of Food Scientists and Technologists and trained in the field of community organisation and community nutrition. She also received business training from the MSME Development Institute Imphal. In starting the business, she purchased machines from outside the state and hired local employees, with good working conditions. The initial packaging was found to be lacking and the company developed higher quality packaging which required buying new packaging equipment. At first, Meira sold products locally but it has expanded to reach a wider market. As the business has grown, it has been able to hire more local people. Products have been marketed through displays at exhibitions and networking with other businesses.

In order to grow, it had to establish an efficient distribution system involving packaging and shipping. The founder has worked with government agencies such as NBM and received loans from banks, family, and friends to help with growth. To support product development, Meira also made use of educational and research institutions, including Manipur University and the Central Agricultural University. Meira has incorporated its story into marketing material and now presents itself as an 'all women empowered company'. After years of growth, the company now has an expanded product range, employs 60 people, and sells worldwide.

Source: Meira Foods n.d.; Devi and Kumar 2018

Charcoal and Activated Carbon

One product that artisans can make is bamboo charcoal. Charcoal briquettes can be made at small-scale facilities with a process that involves compressing biomass material. Bamboo charcoal has multiple uses (Invest India 2021). It can reduce indoor air pollution, purify drinking water, adjust humidity, act as a deodorizer (in air filters, mattresses, and pillows), and can be used as a substitute for wood charcoal and mineral coal. Bamboo is a promising alternative to other types of charcoal for multiple reasons, which include fast growth, producing high quality charcoal, and being cheaper and easier to work with than wood charcoal.

Bamboo Charcoal Production in Nagaland

The Nagaland Bamboo Development Agency (NBDA) has sought to promote bamboo charcoal production. The NBDA has set up almost 50 charcoals kilns. Additionally, Village Bamboo Development Committees have been set up in six districts in the state. This project directly connects with about 200 people and provides support to about twice as many through job creation. The NBDA has marketed charcoal briquettes under the name "Bam Grill" for barbequing and cooking purposes.

Source: INBAR 2016

Utility Items and Lifestyle Products

A wide variety of utility items and lifestyle products can also be produced by bamboo artisans. Items include musical instruments, lamp shades, utensils, jars, vases, bins, brooms, and baskets. Different regions and communities produce such items using diverse production methods and design details.

Incense sticks (agarbatti) are a popular lifestyle product. With expected growth over the next 5 years, in 2018/2019 this industry employed about 2 million people in India and had a revenue close to INR 10 billion (Invest India 2021). In the past, bamboo for incense sticks has often been imported. However, opportunities exist for increased local sourcing, particularly as policy incentives have been put in place to encourage local manufacturing. Notably, in 2009, *agarbatti* was classified as a handicraft product, which made it eligible for duty drawbacks. In addition, it is eligible for a 5% incentive from the Merchandise Exports from India Scheme (MEIS), as well as the Market Access Initiative (MAI) and Market Development Assistance (MDA) (Invest India 2021).

Chopstick Production in PingShang

PingShang Bamboo Group (PBG) is a community group in China that produces chopsticks. They are located in the remote village of PingShang on the northern border of Chishui National Nature Reserve (NNR) in Guizhou, China. In 2004, the village was home to 354 people in 72 families, all from the Miao ethnic group and was only accessible by a footpath. Household income is mostly from the sale of forest products with three-quarters coming from the manufacturing and sale of bamboo chopsticks. The village has exclusive access to over 130 hectares of bamboo forests.

Community producer groups are rare in China's bamboo industry. Chopstick production in much of Chishui County is carried out by single-family units linked to single, wholesale buyers. PBG differs with its structure as a community group. PBG was established in 2004 after the community had over a decade of experience in chopstick production, which involved low quality chopsticks sold at low prices to local buyers.

The establishment of PBG was facilitated by the Guizhou Participatory Rural Appraisal Network. The initiative focused on imparting improved production skills. The project was supported by the Community-Based Conservation and Development Research Centre (CCDRC) of Guizhou Normal University. Also, a company, Hushi, organised training for members of PBG. Staff from the nature reserve also supported the project. They were motivated to ensure that villagers had stable economic and social conditions in order to minimise their need to use resources from the reserve. Furthermore, facilitated by the British Embassy in Beijing, the United Kingdom's Department for International Development's (DFID) Small Grants Scheme provided funding of approximately 4,800 USD, of which one-third was earmarked for the producer group for their first year of operation.

At the start, PBG bought two manufacturing machines, an electric motor, two label-printing machines, packaging bags, and a dryer. This equipment was used to upgrade their products. The people of PingShang now produce packaged chopsticks that are higher quality. Additionally, PBG is involved in all aspects of the production including forest management, harvesting, production, packaging, marketing, and delivery. Final products are collected or shipped to the township capital Hushi and funds from sales are distributed to the village members. By participating in PBG, producers' annual incomes doubled due to increased production levels and receiving higher unit prices.

Source: West and Aldridge 2006

Furniture

Finally, bamboo artisans can also produce furniture. India is the world's fifth largest furniture producer (Invest India 2021). Artisans often produce traditional styles of furniture using bamboo poles. Demand for such products is available for artisans that are able to expand their production. Additionally, opportunities exist to make a wider range of designs that use bamboo in different ways.

Bamboopecker's Bamboo Furniture

Bamboopecker is an Indian business, with their main store in Bangalore, that sells bamboo furniture and lifestyle products. This retailer sells products that use modern designs to appeal to urban customers. However, their products are made by artisans. The company was started with a mission to make 'rural India richer by making the urban populace the consumer of its goods'. To support this mission, they provide training and equipment to artisans, who in turn are able to produce and sell higher value products.

Source: Bamboopecker n.d.

3.1.2 Markets for Artisanal Bamboo Products

The products that India's bamboo artisans produce can appeal to a diverse range of buyers. An overview of key potential market channels is provided in Table 4. Each market has different sales channels and key features, which are discussed below. This is followed by an assessment of some key factors to consider when deciding which market to target. An important overall trend is that the market for traditional products is decreasing and the urban market is growing (I39, I41).

Table 4: Potential Buyers of Artisanal Bamboo Products

Market	**Intermediaries/Sales Channel**	**Key Demands**
Large Branded Buyers (High-Income Countries)	•Buyers' staff •Sourcing intermediaries	•High quality •Custom orders •Compliance with public and private standards •Large orders
Smaller Retailers / Boutiques (High-Income Countries)	•Buyers' staff •Sourcing intermediaries •On-line platforms	•High quality •Custom orders or selected from existing offerings •Compliance with public standards, may require compliance with private standards •Small orders
Large Branded Buyers (India and Other Low-Middle Income Countries)	•Buyers' staff •Sourcing intermediaries	•Medium to high quality •Custom orders •Less stringent standard requirements •Large orders

Market	Intermediaries/Sales Channel	Key Demands
Smaller Formal Sector Retailers / Boutiques (India & Other Low-Middle Income Countries)	•Buyers' staff •Sourcing intermediaries •On-line platforms	•Medium to high quality •Custom orders or selected from existing offerings •Likely no private standards •Small orders
Informal Retailers / Markets (India)	•Local Traders •None (direct sales)	•Low to medium quality •Own-designs •No private standards •Small orders
Nationally Organised Tourist Markets or Exhibitions (India)	•Local Traders •NGOs or Government Programmes	•Low to medium quality •Own-designs •No private standards •Small to medium orders
Large-Scale Consumers (e.g., government agencies or hotels) (Global)	•Buyers' staff •Sourcing intermediaries	•High quality •Custom orders •May have private standards •Large orders
Large-Scale Consumers (India)	•Buyers' staff •Local Traders	•Medium quality •Custom orders •Less likely to have private standards •Large orders •May have domestic procurement incentives
On-line Retail	•On-line platform	•Range of quality •Custom orders or own designs •Not likely to require compliance with private standards •Small to large orders

Source: Author

Large Branded Buyers (High-Income Countries)

A large potential market for bamboo products can be found in supplying for large global branded buyers. This type of buyer typically agrees on a design with producers and places large orders. High quality and consistency are expected and formal standard systems may be required. These buyers can conduct inspections of production facilities related to their specific process requirements. Reaching this market requires relatively high skills related to production quality, administration, and communication.

Kave Home

Kave Home is a furniture company that operates in more than 80 countries. They sell a variety of bamboo furniture items and lifestyle products. They have retail stores and production centers around the world, including in Madrid, Yecia, Seoul, New Delhi, Shenzen and Ho Chi Minh City. They work with manufacturing partners using processes that are intended to be sustainable. They often use materials with sustainability certifications (e.g., FSC, FLEGT and PEFC) and seek to use environmentally friendly packaging.

Source: Kave Home 2022

Small Retailers/Boutiques (High Income Countries)

Another option for bamboo products is selling to small retailers or boutiques in high-income countries. These outlets can have different specialisations. Some have social or environmental missions which may match with sourcing bamboo items from India's artisanal producers. These buyers can look for unique products and place smaller orders. They may require formal standards but they may not. Compared to large global buyers, this market can be easier to access for small-scale producers.

Namaste

Namaste is a UK company that sells furniture and lifestyle products that are intended to be fair trade, ethical, hand crafted, and eco-friendly. They specifically seek to support marginalised small producers. They typically buy from Fair Trade certified producers and sometimes help producers to obtain official certification. This type of certification is intended to show that the product was made under conditions that comply with the 10 Principles of Fair Trade, which covers human and labour rights, along with buying and management processes that support these rights (see discussion on Fair Trade Enterprises in Section 3.2.1).

Source: Namaste 2022

Large Branded Buyers (Low- and Middle- Income Countries)

Another option is to sell to large buyers from low- and middle- income countries. This could include national-scale Indian retailers. These buyers may have lower quality requirement than large brands targeting high income countries. They also place large orders for custom made products. However, they may have fewer or less stringent formal standards than buyers from high income countries (Nadvi 2014; Knorringa and Nadvi 2016; Langford et al. 2022). This market may also be easier to access compared large retailers from high-income countries.

Urban Ladder

Urban Ladder is an Indian retailer founded in 2012. They sell a large range of furniture and home decor products. They reach customers through their retail showrooms in several Indian cities. Their products are also available to order through their website with delivery available to a large number of Indian cities. They have worked with small Indian suppliers providing exclusive production services.

Source: Richa and Mohan 2015; Urban Ladder n.d

Smaller Formal Retailers (India)

Another option is to sell to smaller retailers in India or other low- and middle- income countries. These retailers make smaller orders that may be based on existing or custom designs. They are unlikely to require compliance with private standards. This is an option that can be relatively accessible for small-scale artisans.

Informal Retailers/Markets (India)

Selling products in local and regional markets is currently a common practice. Products are designed by the artisans themselves. Design and quality requirements are lower than formal retail but urban markets may have higher requirements than rural. Additionally, urban consumers may have different design expectations than rural buyers. These sales outlets do not have private standards.

Nationally Organised Indian Tourist Markets and Exhibitions

These sales outlets have some similar features to local and urban markets. However, these are forums that may be arranged by NGOs or government programmes. Producers may receive support from these organisations in order to be able to attend. Wholesalers may visit these forums to make larger orders. They can involve annual events as opposed to ongoing sales avenues.

Global Large-Scale Consumers

Global companies, NGOs and government agencies can act as large-scale consumers. They can be purchasing items such as office supplies. These buyers may want custom orders and may seek producers who comply with private standards. Some of these organisations are seeking to make an effort to engage in conscious consumption related to environmental and social impacts.

Public Procurement in Vienna

The city of Vienna spends approximately 2.5 billion EUR a year on supplies. In 1998, the Vienna ÖkoKauf programme was set up to support the procurement of ecologically sound products. This programme involves seeking to source bamboo products that use sustainable production methods. They also look for certifications, such as FSC, PEFC-CoC or Naturland. Additionally, they consider the environmental impacts of packaging materials.

Sources: City of Vienna n.d.; OECD 2015

Indian Large-Scale Consumers

Indian companies, NGOs and government agencies can also be large-scale consumers. They can buy office products, such as desks and waste bins. Another option is construction companies that may wish to buy scaffolding. These buyers may have local procurement policies which can be an advantage for Indian producers. These buyers are not likely to seek compliance with private standards. However, to sell through the government's GEM portal, producers must be registered businesses.

Gujarat State Tribal Development Residential Educational Institutions Society Schools

In 2011, the Centre for Indian Bamboo Resource Development (CIBART), with the support of the Tribal Development Department of Gujarat, produced school desks which were bought by the government for one school. Following this pilot, the government then mandated that all tribal schools should procure bamboo desks from CIBART. Eventually, nineteen schools procured desks and other furniture. This successful project has led to increased interest from the Gujarat government in procuring additional locally made bamboo items.

Sources: INBAR 2016; UNOSSC and INBAR 2017

On-Line Retail

Another option is for artisans to sell products directly through an on-line platform. A number of on-line platforms exist that can facilitate this process. Consumers using such services may be individuals, wholesalers or retailers around the world. Diverse product types can be posted and listings can offer custom-made or ready-made designs. These platforms are unlikely to require compliance with private standards.

Pepperfry

Pepperfry is an Indian online retailer of furniture and home products. It opened as an online only company in 2012 but now has over 70 stores in 28 cities across India. Their website allows merchants (who can be producers) to register and post their products online. They explicitly promote buying locally made furniture within India. For example, they ran a digital campaign, *Swadeshi is great*, which celebrated Indian artisans.

Source: Tewari 2020; Pepperfry n.d.

3.1.3 Assessing the Potential for Market Options

Each market option may be better suited to different groups of producers. Key factors to consider are existing capabilities, demand trends and potential competitors. Each of these factors are considered below.

Capabilities

The ability to meet the demands of each market is shaped by the capabilities of producers. Notably, it can be difficult and expensive for producers to obtain certifications that are required by some buyers. Accessing any new markets will require artisans to be aware of the market and have some knowledge of its demands. Additionally, it may require modifying production practices and developing new skills, such as marketing. Such developments can be facilitated by cooperation that enables the necessary skills to be developed by only some members of a collaborative endeavour or to be accessed from a third-party (see Section 3.2). Furthermore, governance actors can help to provide support in accessing new markets, as will be discussed in Chapter 4.

Demand Trends

The growth or expansion of each potential markets can be shaped by demand trends. In terms of market options that involve targeting the Indian market, one notable development is that India has a large and growing middle class. This group has increasing demand for household products (Invest India 2021). Furthermore, people from this group are potentially interested in buying locally made bamboo products.

Another trend, which has a global scope, is a growing value placed on sustainability attributes when making purchasing decisions. Bamboo products can appeal to customers who value social and environmental attributes. While this market is currently small in India, it has the potential to expand, particularly in urban areas (Invest India 2021).

Sustainability attributes, which can be desired by end-consumers as well as organisational buyers, can be expressed through formal and informal information sharing. Formal processes include voluntary

sustainability standards, which are "private standards that require products to meet specific economic, social and environmental sustainability metrics. The requirements can refer to product quality or attributes, but also to production and processing methods, as well as transportation (UNCTAD 2022)." For example, bamboo can be certified by the Forest Stewardship Council (FSC) or artisans can be certified as Fair Trade producers. India's bamboo artisans can choose to obtain sustainability standards. These standards generally have a variety of costs and benefits. One benefit is that they can provide assurance for potential buyers. A challenge is that they can often be expensive to obtain and different buyers may look for (or require) different certifications.

Producers can also add social value to their products without adopting formal standards. Products can be marketed through sharing stories about the producers and production processes. These stories can be shared through diverse channels, such as packaging material and websites. They can highlight social and environmental aspects related to the producer or production process. Such stories in marketing can appeal to different types of buyers but may be more effective at reaching buyers who are less price conscious, such as boutiques in high-income countries.

Finally, another important trend to consider is the growth of e-commerce. Global consumers are increasingly shopping online. This is a trend that has grown substantially during the global COVID-19 pandemic (UNCTAD 2020). Notably, e-commerce is a growing phenomenon in India, which has been fuelled by the expansion of high-speed internet and smart phones (Invest India 2021). E-commerce options include platforms that link buyers and sellers (as discussed above), larger businesses that solely operate through online retail, as well as traditional retailers developing online purchasing options.

Demand Trends Related to Specific Products

Charcoal

The global market for charcoal is expected to grow in the coming years. Primary consumers are Japan, South Korea, and Taiwan but the market is expanding in Europe and North America. Bamboo charcoal can meet the demand for more sustainable alternatives to wood charcoal.

Bamboo Food Items

Bamboo food products have a range of potential markets. Bamboo-based food items are popular in India's North-Eastern states. Within India, the diaspora from these states has unmet demand for bamboo products. Additionally, bamboo can be marketed as a new healthy local food. While canned and preserved bamboo currently dominates global markets, growing demand for non-processed food is expected to increase demand for fresh bamboo shoots.

Furniture and Home Decor in India

India is the fourth largest furniture consumer globally and the market is expected to grow in the coming years. Several trends that may increase Indian demand for bamboo furniture can be noted. Foreign investment is growing in the real estate sector, which is connected to an increase in the quality of buildings and desire for new furniture. Additionally, during the COVID-19 pandemic people spent more time at home and set up home offices, which has led to an ongoing demand for more multi-functional spaces. Demand is also growing for locally made products within India. Furthermore, the growth of e-commerce is helping to connect furniture companies with potential buyers. Finally, there is a growing consumer demand for products that are environmentally friendly.

Sources: Invest India 2021; I20

Some platforms provide the ability for remote producers to directly connect with potential buyers. This can be a good option for third-party led and self-governed production models (see Section 3.2.2). With this option, buyers or third-parties would need to have the capabilities to manage the necessary logistics and communications systems. This type of approach can look to the Chinese Taobao Village system for inspiration. Taoboa is a web platform owned by Alibaba that provides individuals or companies a place to sell their products. The platform first became popular in cities but then spread to rural areas. Often many sellers from the same village would sell similar products and a range of support services developed around them in a process that resulted in the formation of new clusters (Qi et al. 2019). Examples of web platforms in India that producers can access include Pepperfry and GoCoop.

Competition

Another key factor to consider is the competition faced by India's bamboo artisans. Competition can come from multiple directions. Key competitors can differ for each product type and target market.

One market to consider is mass-produced, low-priced items. India's artisanal bamboo products often compete with these items within India (Khadi and Village Industries Commission 2011). However, bamboo artisans can struggle to compete with cost, quality, and timelines offered by large-scale factory-based production (I22). This is particularly an issue for market channels with cost-conscious buyers.

China is a major player in the mass-produced, low-priced market. Notably, China can produce very large quantities of standardised products, which is something that artisanal producers typically cannot do. Consequently, Indian artisanal production does not seem well-suited to compete in this space.

Another type of producer that bamboo artisans can compete with are those targeting high-income urban consumers (Khadi and Village Industries Commission 2011). Such producers may have more resources to put towards marketing. Indian artisanal producers have more potential to compete in this market than in the mass-produced, low-priced market. To get ahead in this market, they can learn from looking at how successful producers behave. This can include looking at product designs and additional services that are offered by global competitors and other Indian businesses that have been successful.

Another issue to consider within India is that Indian production competes against imports. A factor which can help is that international competition can be regulated through policy. Within India, domestic producers can be supported through restrictions on imports, subsidies for domestic producers, and incentives to procure locally.

A further issue is that bamboo products often compete against products made of other materials, such as timber, metal, or plastic. In some cases, potential consumers can have a preference for the non-bamboo options. It can be hard to change consumers' preconceptions about bamboo products. However, bamboo businesses and other governance actors can highlight the benefits of bamboo products.

In addition, another challenge can be that competitors' products are higher quality. While products made from bamboo can be strong and durable, oftentimes specific production techniques need to be used to harness these features. India's artisanal producers are often lacking knowledge about techniques and access to appropriate equipment to realise these benefits (UNDP 2018). Overall, improving the quality of products can be important for multiple potential target markets.

Finally, across multiple market options, India's small-scale producers can struggle to compete with larger competitors. One option for addressing this challenge is to increase collaboration. This is a key way for India's artisanal producers to become more competitive and is discussed in depth in Section 3.2.1.

3.2 Production Organisation Options

Artisanal production for bamboo products can be organised in different ways. A key issue is collaboration in production processes. The first part of this section considers dynamics of horizontal cooperation (between producers) and potential models for engaging in collaboration.

Another major issue is the type of governance structure shaping a production system. In many cases, the governance structure of a value chain can be seen to be shaped a particular actor or multiple actors that shape the options for other actors in the chain (Ponte and Sturgeon 2014). The second part of this section considers dynamics of different types of production governance models. Models considers are self-governance, third-party governance, and buyer-governance.

3.2.1 Horizontal Collaboration Among Producers

On their own, many of India's artisanal producers struggle to earn a living. Collaboration can provide a number of benefits, which are discussed below. However, collaboration is a difficult process, which needs enabling factors and can face multiple barriers, which are also discussed below. Finally, this sub-section ends with a consideration of the dynamics of different forms of collaboration and the processes involved in collaborating.

However, while collaboration has many benefits, it is important to consider that collaboration is not a silver bullet. Based on the dynamics discussed below, it is important to design collaborative models to meet producers' specific needs. Collaborative models need to balance the costs (time, money, effort) required to build cooperation with the potential benefits. Additionally, a key issue to consider is identifying which elements of producers' businesses can benefit most from collaboration (e.g., sourcing, production, or marketing, etc.).

Benefits of Collaboration

It is not feasible or sustainable to address the challenges faced by India's craft producers (e.g., production and quality control; distribution - marketing, branding, promotion, sales; performance management; infrastructure) at the individual level, thus action involving a collective mechanism is needed (Khadi and Village Industries Commission 2011). Horizontal collaboration through formal producer organisations or looser forms of cooperation can provide diverse benefits (Rani 2008; Saarelainen and Sievers 2011; Singh and Singh 2014; Traon et al. 2019; Groot Kromelinck et al. 2019). These benefits can be divided into the categories of economies of scale, individual learning and developing, and increased power (see Table 5). The results of these benefits can involve a number of positive outcomes that are felt directly by producers, such as higher quality products, more efficient management, better access to potential clients, the development of a more supportive ecosystem, and improved living standards for producers. Each of the benefits is explored below. Additionally, collaboration can create spillover benefits, that are felt beyond actors directly involved in the collaboration (see Table 5). The discussion below also considers how producer collaboration can benefit local communities and buyers.

Table 5: Benefits of Collaboration

Benefits to Collaborators	• Economies of Scale
	  ○ Cost reduction
	  ○ More efficient production processes
	  ○ Reducing individual workload
	  ○ Spreading risk
	• Individual learning and developing
	  ○ Business upgrading
	  ○ Informal learning
	  ○ Formal training and other assistance
	  ○ Access to improved inputs (e.g., equipment)
	  ○ Facilitating formal and informal innovation processes
	  ○ Personal benefits (e.g., belonging to a community)
	• Increasing power
	  ○ Developing a collective identity in bargaining situations
	  ○ Having more legitimacy in public forums
	  ○ Being resilient to pressures

Spillover Benefits	• Community economic development • Buyers can have a relationship with one unified actor

Source: Author

Economies of Scale

Economies of scale present a key benefit of collaboration. One element of economies of scale is being able to reduce ongoing costs. For example, items can be cheaper when bought in larger orders, such as raw materials, other production supplies, storage, transportation, packaging, and waste management. In some cases, services may not be accessible to individual small-scale producers but can be procured jointly, such as marketing services, research and development, or obtaining third party certifications. Another way that costs can be reduced is through a reduction in indirect transaction costs, such as the costs of searching for a supplier or a buyer. Producer organisations can also coordinate the process of accessing public services, so that each individual producer does not need to carry out activities that can involve a lot of paperwork. Furthermore, products and services that are procured through a collective process can end up being better quality than those procured by individual artisans. This can result in improved production outcomes.

Another way that economies of scale can benefit producers is related to production processes. Producers can collaborate on elements of production while preserving an artisanal production system. Collaboration can involve specific stages of production being carried out at a larger scale. For example, a coordinated quality control system. Such forms of collaboration can save time and money, while allowing artisans to continue to engage in their craft.

Moreover, hiring service providers can allow producers to cease doing some activities internally. For micro businesses, in which producers on their own often have to deal with all aspects of running a business, a key benefit of collaboration can be the ability to offload some tasks. This can be a particular benefit for tasks that are time consuming on an individual basis or tasks that require skills that the artisan is lacking. For example, some administrative tasks can be handled by a collective body.

In some cases, collaboration can also reduce the need to pay for expensive external service providers. For example, producer organisations can carry out roles that were previously carried out by intermediaries or they can do pre-processing of raw material. Internalizing such steps can result in producers being able to gain more income for their products.

Economies of scale can also help to mitigate the risks faced by individual producers. For example, a producer organisation can help to absorb risk related to price fluctuations, such as those that arise in a crisis. Producer organsations can also have insurance schemes that are managed internally or bought from an insurance provider. Additionally, work can be spread across the group to prevent periods when a single producer may not have any income. Furthermore, trading through a producer organisation can also provide more security as a larger producer can have more leverage when dealing with a buyer.

Individual Learning and Developing

A second benefit of collaboration can be seen as the benefits individual members can receive. Key sources of these benefits are learning and developing. Overall, by partaking in collaborative activities, in many cases each individual business can upgrade.

Collaborations can allow participants to gain benefits from formal and informal services. An informal service is information sharing between members. Consequently, when an artisan joins a collaboration, they can join an information sharing network.

Producer organisations also often provide a variety of more formal services for members. These can be services that the organisation arranges from outside providers or, in some cases, producer organisations run their own services and offer them to members at competitive costs or for free. Services can include providing technical, market or production information; infrastructure and equipment; logistics support; quality control services; production coordination services to meet market needs; value-added elements or services (e.g., packaging); education; advice; communication during a crisis; assistance with trade fair participation; links to new buyers and suppliers; access to loans; and assistance with completing applications for external support programmes.

Access to services provided by producer organisations can help with product and process upgrading. Notably, communal services can involve the use of more sophisticated equipment that can result in better quality products, such as better finishing techniques and even the creation of more complicated products. Furthermore, storage and transportation services can help to ensure higher quality final products. In some cases, producer organisations can play a role similar to a third-party certification scheme, which can involve audits and providing a label that certifies products meet a set of standards.

Services provided by a producer organisation can have a variety of outcomes. In some cases, benefits are only felt while a producer is a member. For example, a business benefiting from the provision of logistics services.

However, other outcomes have longer term impacts that can be independent of remaining a member. This is the case when membership helps individual producers to learn or make internal changes. For example, producer organisations can offer formal training, which helps members learn how to produce higher quality products. Firm-level learning can also involve informal pathways, such as quality control

services helping individual producers to become aware of defects in their products, thus leading to increased quality of production. Support received from producer organisations can also have other long-term impacts, such as helping to increase efficiency.

Another way that producer organisations can support upgrading is facilitating innovation. In addition to improving quality of an existing product range, support services can help to introduce new production processes, products and product features into artisans' businesses. Producer organisations can facilitate both formal and informal innovation processes. In terms of formal processes, producer organisations can invest in research and development activities and enable producers to benefit from the outcomes. In terms of informal processes, collaboration can involve heightened levels of information sharing which can facilitate innovation emerging organically among collaborators.

In turn, innovation can provide a variety of benefits. Achieving more efficient processes, through process innovation, can save money. In addition, product innovation can provide a variety of benefits. For example, developing higher quality products can help with sales. Furthermore, diversifying product offerings can create a buffer for risk.

A further way that producer organisations can enable upgrading is through helping artisans to improve how their businesses are managed. Artisans can learn about new marketing, organisational, and financial strategies. For example, artisans can learn better record keeping strategies.

In addition to the direct commercial benefits of collaboration, there are other types of benefits that artisans can receive. For example, with many forms of collaboration, individuals who join are able to have a voice in shaping group decisions. The ability to join a democratic organisation can be a driver for some producers to join a producer organisation. In some of these organisations, members also learn skills related to being able to express themselves and stand up for their own interests.

Another benefit can be the opportunity to be part of a community. Producer organisations can create a forum for members to have social interactions. This dynamic can benefit producers by creating a sense of belonging and support from other members. While these organisations require some level of trust to instigate (see 'Enabling Factors and Barriers for Collaboration' below) participation can also build stronger trust among members.

Increasing Power

A third type of benefit that can be achieved through collaboration is that it can enhance producers' power. As individual micro-enterprises, many bamboo artisans do not have much power. However, working collectively they can exert more power. This power can play out in within individual relationships or involve creating more widespread pressures at an industry level (Dallas et al. 2019).

Power emerging from a collective organisation can be seen to take three forms. The first involves being a strong force in direct negotiations. By creating a collective identify, collaborative organisations can act as a larger player compared to each individual producer when interacting with other organisations (e.g., buyers, suppliers, and service providers). Together, a coalition of producers can have more bargaining power in these interactions. In such scenarios, producer organisations can take strong position to protect members' interests. Furthermore, when collaboration results in many smaller local players coming together, it can reduce internal conflict in a region and help the region express a unified front to other actors.

The second way that power can be exerted is through having more legitimacy in public forums. With a unified voice that represents the needs of members, producers can have more impact in discussions related to governance factors in their production ecosystem. Specifically, this voice can be used for advocating producers' interests in terms of shaping government rules and regulations. In some cases, producer organisations can promote particular ideologies, such as the cooperative movement or promoting alternative agricultural systems. Prominent producer organisations can also act as role models for other producers.

Another context where a producer group can have more legitimacy is in the marketplace. Being part of a producer organisation creates the ability to publicly advertise with a shared identity. This can involve joint packaging, labelling or promotion. Overall, members can be covered by a unified marketing strategy, including promotional activities and managing sales. This can enable producers to access new markets. As a bigger player, producer organisations can help their members to gain access to more market channels. To access some markets, minimum quantities are needed. Collaborative sales of products can help artisans to reach these minimums. Furthermore, a single brand can help reassure buyers about quality. Notably, there can also be synergy between collaboration and improved quality.

Finally, another context where a collective identity can create increased legitimacy is in the eyes of potential support actors. A collective identity can make it easier to access loans and other support from financial institutions, governments, and NGOs. Access to such programmes can be a strong incentive for producers to collaborate (see Enabling Factors and Barriers for Collaboration below). Additionally, in some cases, producer organisations can be exempt from requirements applied to other producers, such as elements of competition rules (Traon et al. 2019).

A third way that collaboration can increase producers' power is through increasing their resilience. With growing levels of competition and economic transformation related to liberalisation, that have resulted in the influx of new technology and competitors, small-scale artisans can struggle to compete. These pressures can result in harsher working conditions and new organisational forms that can cost some their livelihoods (Singh and Singh 2014; Shah 2019). Being part of a larger organisation can help producers to withstand some of these pressures. Moreover, they can also be stronger when standing up to individual actors, as described above in the discussion of bargaining power. Finally, resilience can also be helpful in times of crisis when a collaborative structure can help to absorb shocks.

Spillover Benefits Created by Collaboration

The benefits of collaboration are not solely felt by the participants themselves. Producer organisations can also create benefits that are felt outside of those experienced by individual members. These benefits can be felt by the communities where collaborations are located and also by buyers.

Producer organisations can have direct and indirect positive impacts on local communities (Bijman et al. 2007). One major benefit is the creation of demand for services which can help to create new jobs. These jobs can be diverse (e.g., management, administration, marketing, production, and accounting). In some cases, producer organisations provide training when qualified staff are not available (Traon et al. 2019). Producer organisations can make decisions about whether to hire people internally or rely on outside service providers. Both decisions can result in job creation.

Producer organisations can also improve the reputations of local regions. Impacts of an improved reputation can include attracting new suppliers, customers, investments (e.g., in infrastructure), talented migrants, and ideas (UNDP 2018). They can also include benefits felt by producers in the same region that are not members of the organisation, such as higher prices and better commercial conditions (Traon et al. 2019).

Overall, these dynamics can result in enhancing local development. Together, all of the benefits can help to increase internal and external trade. Additionally, some producer organisations actively seek to ensure production processes are in line with local development objectives (Rani 2008; Braun Munzinger 2018; Traon et al. 2019).

Finally, collaboration can provide benefits for buyers. Specifically, buyers can benefit from dealing with one larger organisation compared to buying from multiple smaller producers (Traon et al. 2019). Benefits can include being able to get more regular supply, more stable prices, consistent quality, simpler delivery processes, an overall reduction in transaction costs, and better relationships. The efficiencies created by producer organisations can also result in lower prices and better-quality products. In addition, when dealing with a producer organisation, buyers have a single point of contact if any problems arise. Furthermore, the existence of a producer organisation can attract buyers who value sourcing from a particular region, such as those looking for local products (Traon et al. 2019).

However, it should also be noted that buying from a producer organisation can create some challenges for buyers (Traon et al. 2019). One pitfall is the higher level of leverage that a producer organisation can have. Buyers can prefer to deal with smaller suppliers so they can have more leverage. Another challenge buyers can have with sourcing from producer organisations is that they may not be able to accommodate new evolving requirements in the same way that one larger business could. Making coordinated changes that require modifications to the activities of many individual producer members can be difficult. Furthermore, another challenge can be that producer organisations may not invest as much in innovation and development as other large suppliers.

Enabling Factors and Barriers for Collaboration

While there are many benefits that producers can receive through cooperation, there are also a number of reasons why producers may be more or less willing to cooperate (see Table 6). Producers need to have suitable enabling factors in order to be able to cooperate. Notably, a study led by Traon et al. (2019) identified a number of reasons why producers may not want to join producer organisations. The bulk of the discussion below draws from Traon and coauthors' report.

Table 6: Enabling Factors and Barriers to Collaboration

Contextual Factors	**Producers' Perspectives**	**Potential pitfalls**
• Local trust levels and alignment of objectives • Regulations creating difficulties or providing support • Benefits and service available	• Acceptance of status quo • Level of risk aversion • Awareness of examples of successful collaboration • Perceptions of collaboration	• High costs of complying with regulations and administrative burden • Poor leadership • Loss of freedom and control • Exposure to increased scrutiny • Free-riders

Source: Author

Contextual Factors

It is important to note that contextual factors can be enabling or create barriers for collaboration. The context can shape how easy it is to begin a collaboration. It can also shape how easy or hard it is to maintain ongoing cooperation.

A key facilitator to collaboration can be working in the same location. In India production often occurs in clusters (Das 2005; Knorringa and Nadvi 2016). Clusters involve sectoral and spatial concentration (Schmitz and Nadvi 1999). Notably, operating in a cluster creates the potential for joint action (Lund-Thomsen and Nadvi 2010).

However, businesses being located in close proximity to each other does not ensure that they will collaborate. Local dynamics can shape the propensity and ability for collaboration to occur. Additionally, local factors can shape the form that collaboration will take (see Dynamics Involved in Collaboration below).

One aspect of local dynamics is local history. Artisans past experience can shape how they perceive a potential collaboration. A key contextual factor can be existing levels of trust and agreement between producers. It can be hard to establish cooperation in contexts with low levels of trust.

Local norms and customs can also shape how collaborations function (Bijman et al. 2007). Such dynamics can have different impacts. For example, people may be more or less willing to trust each other based on local expectations.

A relevant aspect of local history is whether a local productive system has past experience with engaging in collaborative practices (Traon et al. 2019). Positive past experiences can strengthen producers' interest in collaboration. However, negative past experiences can create negative perceptions of contemporary collaborative options.

High levels of heterogeneity between producers can create situations where producers have diverging perspectives. Lack of alignment can create difficulties with agreeing on how to design a collaborative endeavour. Furthermore, in some regions there may be cultural barriers that might make people hesitant or unwilling to collaborate (e.g., caste or gender prejudice). Additionally, conflicts can occur related to the interplay between local political and social structures with organisational governance.

A second key contextual factor is the regulatory environment (e.g., through competition policy, tax policy, options for and clarity about potential organisational forms, and requirements for registration). In some cases, regulations make cooperation difficult. In others, they provide support.

Registering a collaborative organisation can be difficult and require legal expertise. In some cases, the registration process can be slow, have out of date or unclear requirements, and lack support from public sector administration. Being part of a formal producer organisation can also involve a high administrative burden in some cases. For example, different forms of information may need to be collected or regulations may be in place related to how products can be sold. Meeting regulatory requirements may require hiring outside support.

Overall, local regulations determine the options for how producer groups can be organised. Additionally, aspects of the regulatory system can shape the type of collaboration that would be most suitable for a particular group of producers. Within India, multiple forms of legal and informal collaboration are possible but can face distinct challenges, (see Organisational Forms below).

A third contextual factor is whether there are benefits available. The existence of benefits which are only accessible to groups could act as a motivational factor. However, such incentives may induce groups that are not stable as they may be overly focused on receiving the available benefits to the detriment of creating a functioning collaborative group. Additionally receiving financial support can also have additional requirements that can shape the activities within the collaboration. For example, in Europe support for some farmers groups is connected to environmental actions.

Another related issue is whether there are services available locally to support larger groups. Within the region, there may be access to a limited pool of expertise (Bijman et al. 2007). For example, there may be challenges related to available management skills or logistics services.

Producers' Perspectives

Another important factor to consider is the perceptions of individual producers. Some producers are more open to collaboration than others. One circumstance that can prevent a producer from joining a collaboration is when the producer is already satisfied with their current situation. In such a case, producers may not feel motivated to make a change.

Furthermore, some producers do not want to make changes, even if they are aware of potential benefits. Notably, they may be risk averse. While any change can be perceived as a risk, a particular risk that can be encountered when joining a cooperative endeavour can be that it can involve changing sales tactics to focus on larger buyers. This strategy can result in a scenario where producers are depending on an individual or small number of large buyers. In this circumstance, it may be hard to find new buyers to absorb all production if a relationship ends.

Alternatively, producers may be reluctant to cooperate if they have negative perceptions of collaboration. Such perspectives can exist when there is a lack of information on the potential benefits or they have seen examples of producer organisations that have not benefited participants. Additionally, in some cases, they may perceive some potential benefits but consider that the potential costs outweigh the potential benefits.

Potential Pitfalls

While there are many potential benefits of collaboration, there are also potential costs. One type of cost is the regulatory burden, which as described above can vary across contexts. Producers can also see joining as being costly when a producer organisation has high access costs, such as complying with requirements (e.g., production standards, investments, monitoring, or membership fees). Another type of cost can be a high administrative burden related to membership. The perception of these costs can differ for producers who work full-time versus those who work part-time. In some cases, potential members feel they do not have the time or money necessary to become members (Rani 2008).

Another situation that can detract a producer from joining a collaboration is when there are problematic leaders or managers (Saarelainen and Sievers 2011; Groot Kromelinck et al. 2019). One challenge can be

that managers lack necessary skills. Another challenge can be that managers or leaders are using their positions to seek personal gain or that they are perceived to be working for ulterior motives.

For some producers, another type of cost is a loss of independence. Some producers place high value on being able to control every aspect of their own business. Another related element is losing external visibility. Furthermore, in some cases, smaller members can feel that decisions may be made in the interests of more powerful members. Another potential challenge can be that, if the producer organisation has a relationship with a large buyer, the organisation can be seen as a mechanism to transfer buyers' demands to members. The producer organisation can also be seen as a type of middleman, which makes money on the producers' products.

Producers can also fear another type of cost related to joining a producer organisation. They may fear receiving greater scrutiny from outside actors. One aspect of this concern is that membership may draw attention from authorities, which can be a problem if they are engaged in grey or black-market activities. Another aspect can be that producers may be worried about scrutiny and expectations from the producer organisation itself, such as having to reveal sensitive business data.

A further turnoff can be that producers may not want to join because they are worried about free riders. Two types of free riders can be identified (Saarelainen and Sievers 2011). One group is non-members benefitting without contributing. The second group is comprised of members engaging in activities that undercut the benefits of the collective. For example, they may sell additional products on the side when it is not allowed in the terms of the collective agreement.

How each producer balances the potential costs and benefits can differ. This can result in different decisions among a group of producers in one region. One key issue can be whether the producer takes a short-term or long-term perspective.

Dynamics Involved in Collaboration

To this point, collaboration has been discussed in a general way. However, an important factor to consider is that collaborations can take different forms and have different dynamics. How collaborations function can be a feature of how they are designed. Success can be measured in diverse ways, which include longevity, business growth, profitability, and member satisfaction (Traon et al. 2019). The choice of design can be specific to the circumstances of the producers involved. Key issues considered here are group formation, resource needs, organisational forms, organisational missions and strategies, organisational features and dynamics, and general best practices.

Group Formation

Group formation involves a number of aspects. One key issue is how the group is initiated. Groups may be formed around a strong leader or be a reaction to a pressing issue. Incentives to create groups can come from different sources, such as market incentives (e.g., demand for organic) or public incentives (Groot Kromelinck et al. 2019). Organisations that are formed based on market incentives can benefit from public support. Additionally, a key risk is that organisations that are formed in order to access public support can be short-lived.

Overall, the process of group formation can influence the potential for the group to succeed. Therefore, it is important to consider the process of how a group is formed. Some best practices involved in forming groups are outlined in Box 2.

Box 2: Best Practices for Group Formation

- Organising informal meetings with prospective members to discuss purpose, methods of operation, benefits, and potential activities can help with group design
- Key decisions to take:
  - funding model and potential income-raising activities
  - criteria for group membership (e.g., common need, common interest, similar products, similar size, social affinity, socioeconomic status, or neighbourhood)
  - leadership (can be rotational) and other roles
  - record keeping system
- Community consultations can be beneficial
- Overly rapid group creation or long delays can both be detrimental

Source: Rani 2008

A decision producers can face is whether to join an existing organisation or whether to form a new organisation (Traon et al. 2019). Joining an existing group is less risky and may have a lower cost. However, small groups of producers may want to create their own group to have higher levels of control. In some cases, it can be better to create a new spin off group as opposed to transforming the mission of an existing group (Groot Kromelinck et al. 2019).

In some cases, groups are brought together by external actors. Groups that are formed by external actors often only last as long as the project period. Due to this dynamic, it can be beneficial for external actors to seek to work with existing groups when possible (Rani 2008).

Resources and Requirements Needed to Operate

A factor shaping the ability of groups to operate is whether they have the resources and other requirements necessary to operate. One issue is the amount of time and money that members have to be active participants (Rani 2008). A challenge can be maintaining participants' ongoing commitment over time. If expectations are not achieved in the short-term, participants can lose interest (Rani 2008). Building loyalty and commitment can be based on creating a perception among members that the organisation is effective as well as building trust and a sense of identity (Traon et al. 2019). Maintaining commitment and loyalty can require more than good value for money or quality services; it can also be shaped by emotional value and affective commitment (Traon et al. 2019).

Achieving harmony in larger groups can be more difficult. However, actions can be taken to address this challenge. Harmony can be promoted by making sure that everyone is involved, avoiding self-interest from over shadowing collective interest, and facilitating balanced expression of diverse interests (Rani 2008).

Another issue can be whether the organisation can access needed forms of external support (Rani 2008). Being able to access external resources can be beneficial as a lack of resources can inhibit organisations from achieving their goals (Traon et al. 2019). However, an over-reliance on external support can detract from following market signals (Saarelainen and Sievers 2011).

Organisational Forms

Collaborations can be diverse. They can have different internal characteristics, such as forms, purposes, management systems, and membership types. They can also differ in how they interact with other organisations. The design of a producer organisation can shape how effectively it can operate and fulfil its objectives. A variety of examples of forms of cooperation are displayed in Box 3. The discussion below explores a few forms of collaboration in more depth.

Box 3: Forms of Formal Collaboration

- Alliances
- Associations
- Business associations
- Clubs
- Committees
- Commodity groups
- Common interest groups
- Community networks
- Co-operatives
- Federations
- Groups of farmers formed on compact lands assigned to Scheduled Caste (SC) and Scheduled Tribe (ST) farmers
- Groups of wage labour promoted under National Rural Employment Generation Scheme
- Interest groups
- Joint liability groups
- Marketing cooperatives (can have retail outlet or have institutional contracts)
- Mutual benefit trusts
- Mutually aided co-operative societies (or self-reliant co-ops)
- Networks
- Partnerships
- Private limited companies
- Producer networks
- Public limited companies
- Rural support organisations
- Rythu mithra groups
- Self-help groups (SHGs)
- Societies
- Trusts
- Unions
- User groups
- Users of CFCs
- Vana samrakshana samithis
- Village organisations (federations of SHGs at village level)
- Watershed associations

Source: Author

A form of collaboration that does not require high levels of cooperation or the formal creation of a producer organisation is using the same CFC. In many cases, these centres have been set up by NGOs or

other external actors. Individual producers can share in using the services of such centres while remaining relatively independent in relation to other aspects of their businesses.

Other forms of collaboration involve more intra-group coordination. A form of group that is common for bamboo artisans to be members of is a SHG. These groups involve individuals coming together to solve similar problems. They have often been formed in relation to getting access to microcredit. Potential exists for these groups to expand their missions to address diverse challenges faced by their members.

Another option is for producers to work together as members of a business association while running their own separate businesses. Business associations are "long-term organizations with formal statutes regulating membership and internal decision-making in which the members are individual business people, firms, or other associations" (Doner and Schneider 2000, p. 280). They involve a form of collaboration that often gives individual members high levels of freedom.

Cooperatives are another form of collaboration. Cooperatives are typically a much more formal and regulated type of collaboration than the examples discussed above. A cooperative can be defined as "an autonomous association of persons united voluntarily to meet their common economic, social and cultural needs and aspirations through a jointly owned and democratically-controlled enterprise (International Cooperative Alliance 2018)." Cooperatives usually operate on a one-member one-vote model (Doherty et al. 2020). Producer cooperatives can act as businesses jointly selling the outputs of their members.

In India this form of organisation has often been promoted by the state. However, many cooperatives have had poor outcomes. Diverse challenges faced by cooperatives have been identified (Rani 2008; Khadi and Village Industries Commission 2011; Singh and Singh 2014). These include focusing on welfare as opposed to commercial business, experiencing capital constraints as a result of government financial support being withdrawn, facing high competition in the marketplace, difficulty accessing credit and technology, free riding members, commitment to buy entire produce of members, lack of financial and managerial resources, lack of agility to take market-oriented decisions, political interference, corruption, and elite capture.

Nevertheless, despite the challenges, India has also had positive experiences with cooperatives. Notably success has been experienced in government-led cooperative endeavours in the handloom sector as well as in bottom-up initiatives related to other crafts (Shah 2019). Cooperatives often create the right conditions for female participation and often the majority of those involved have been women (Shah 2019).

Over time, state support for cooperatives has slowly declined, while cooperatives have faced increased competition in the marketplace due to privatization and liberalisation (Singh and Singh 2014). However, new market dynamics also create new opportunities for cooperatives. In some cases, these have been created as a result of state withdrawal and deregulation (Singh and Singh 2014). Notably, the regulatory environment and available support for cooperatives may change in the coming years. In 2021, the government launched the new Ministry of Cooperation. This ministry plans to strengthen cooperatives through supporting transparency, modernisation, and computerisation (Ministry of Cooperation 2021).

Mahila Kar Kushala Charma Grameena Udyoga Mathu Mahila Makkal Abhivriddhi Sahakari Sangh Limited

The Kalyana-Karnataka women's leather working cooperative was established in 1991. By 2008 it had 450 members from a cobbler community and produced about 1,500 pairs of shoes a week. The cooperative started in relation to receiving training on footwear production. Its development has been supported by the Gulbarga Industrial Development Authority through the provision of a space for a production centre. The cooperative's successful expansion has included being able to establish two additional production units.

Source: Jan 2008

As a reaction to challenges experiences by cooperatives, producer companies were developed as a new legal form within India that enables producer groups to have more freedom to operate as businesses (Singh and Singh 2014). Producer companies were introduced in a 2003 amendment of the Companies Act, 1956. Specifically, producer companies are intended to allow primary producers to benefit from a cooperative structure in a way that allows them to also have the perks related to being registered as a company (Khadi and Village Industries Commission 2011). Benefits include being able to operate throughout India, being able to form joint ventures and alliances, and being subject to less government involvement than cooperatives (Singh and Singh 2014).

Greenkraft

Greenkraft was originally started as Industree Crafts Foundation by social entrepreneur, Neelam Chhiber in 2003. By 2012 it had evolved into a producer company based in Banglalore that makes furniture and home decorations. Their products are made from natural fibres and are sold in about 100 stores across India, including FabIndia. They also export, with customers including global brands such as Ikea, H&M, and Williams-Sonoma.

Greenkraft's model enables artisans to connect directly with buyers without having to work with intermediaries. As part of Greenkraft, female artisans working within SHGs receive training. Additionally, workers have eight-hour days, earn legal minimum wages, and receive benefits including social security, pensions, health insurance, and childcare.

Source: Women on Wings 2017; Pratap 2020

Organisational Missions and Strategies

Producer organisations can have different purposes. One distinction is whether they focus on economic or non-economic activities (Groot Kromelinck et al. 2019). This can involve a distinction between whether or not they are output driven or value driven. This is a key issue for bamboo artisans. An outcome-driven approach may lead to the creation of factory style production. A value-driven approach can consider the value of craft processes and community development. However, the differences are not necessarily clear cut. Promoting a value-driven approach, such as production that embraces traditional methods, can create value in the marketplace.

In some cases, collaborative endeavours can be considered as social enterprises. This business form is characterised by three elements (Doherty et al. 2020). First, they have a primary social or environmental mission. Second, they reinvest the majority of their profits into pursuing their missions. Third, they are owned and governed in the interests of their mission. Fair Trade Enterprises, which are mission-led, focus

on the interests of their producers, and subscribe to the 10 Principles of Fair Trade (see Box 4), can be considered as social enterprises. These are mainly SMEs and have been found to be more resilient than other SMEs (Doherty et al. 2020). The idea of moving away from the profit focus found in shareholder capitalism is increasingly being explored, even at high levels, with the World Economic Forum in 2020 focusing on defining stakeholder capitalism.

Box 4: 10 Principles of Fair Trade

1. Opportunities for disadvantaged producers
2. Transparency and accountability
3. Fair trade practices
4. Fair payment
5. No child labour, no forced labour
6. No discrimination, gender equity, freedom of association
7. Good working conditions
8. Capacity building
9. Promote fair trade
10. Respect for the environment

Sources: Doherty et al. 2020

Another distinction that can be made between groups is those that focus on claims versus those that focus on efficiency (Thorp, Stewart, and Heyer 2005 as cited in Groot Kromelinck et al. 2019). Claims groups are focused on obtaining better support for producers. Efficiency groups are focused on increasing the efficiency of producers' businesses.

Producer groups can also be distinguished by having different market strategies. A clear focus and identification of competitive advantage is important for market-oriented collaborations. Producer organisations have been found to use three strategies (Traon et al. 2019). One is cost leadership. A second is a differentiation strategy, which involves producing high-quality products that are branded. The third strategy involves focusing on the specific needs of a target group and adding features that will appeal to them.

Finally, an important consideration is that some groups can be formed with limited and possibly time confined purposes. For example, a group can be formed with the specific purpose of producing one large order. The types of activities that are involved in the collaboration can be based on the purpose of the collaboration. Notably, if the purpose is to increase profits, the elements of collaboration (e.g., sourcing or marketing) and the size of collaboration can be determined by a cost benefit analysis that considers the effort needed to establish cooperation versus the expected benefits.

Organisational Features and Dynamics

The features and dynamics of a collaboration can be shaped by the organisational form and mission. However, there can be variation along a number of dimensions. Key elements, which are discussed below include level of openness, types of members, management dynamics, and relationships with external organisations.

A key characteristic of a collaborative organisation is its level of openness. This can be reflected in their openness to new members, incorporation of democratic practices, and level of sharing information with members. The way these features are organised shape how and if trust is built (Traon et al. 2019).

Another feature of collaborations is the type of members that they have (Traon et al. 2019). When members are similar in terms of their capacities, cooperation can be easier. Whereas, when groups involve heterogeneous members, decision making can be more difficult. Internal differences can also impact member commitment and willingness to contribute.

Heterogeneity tends to increase as producer organisations grow. However, as discussed above, one of the benefits of a producer organisation can be economies of scale, which means that growth in membership can be beneficial. Producer organisations can use a variety of strategies to deal with heterogeneity (Traon et al. 2019). They can offer incentives that distinguish between different members' preferences. Additionally, they can seek to build a common strategic vision.

The way collaborations are managed is another key feature which shapes how they are run. One key factor is the leadership team. Strong leadership can make an organisation more efficient but an overly dominant leader can reduce the likelihood of an organisation's success (Traon et al. 2019).

As cooperation can range in its level of formality, collaborative endeavours can have highly varying management systems. Formal collaborations may be registered organisations that hire professional staff. Such producer organisations may struggle to be able to offer sufficient salaries to attract good managers or may not be able to keep them. Furthermore, producers need to trust the managers and allow them adequate space for decision making. In some cases, producer organisations have a board that is made up of producers and the management team is responsible to the board.

However, professional management can be too expensive for small producers in developing countries, leaving self-management the most feasible option for organisations without external support (Ton et al. 2008). In many cases, leaders are chosen from among the producer group or rotate. In such circumstances, leaders may not have formal management training. Lack of management skills can make it more difficult to achieve the organisation's objectives.

Nevertheless, skills from management training and past experience may not always be transferable to leading a collaborative organisation. A particular challenge is that producer organisations need to be managed differently than other enterprises. A key difference is that the objective is to have good outcomes for the individual members as opposed to the organisation as a whole (Traon et al. 2019). Additionally, value-driven collaborations may have different objectives than non-value driven organisations.

Another factor related to how a group is managed is its state of maturity. While the process of group formation is important, it is also important to consider that groups can change over time. Organisations can be seen to move from inception, to growth, to maturity, to decline or redevelopment (Traon et al. 2019). The stage a group is in can be connected to the challenges it experiences, the benefits it provides, its strategy, and results. Across these stages, groups have to deal with evolving factors in their operating environment (Rani 2008). One issue can be that if groups are formed related to a specific need, they can dissolve if that need is resolved (Rani 2008). Organisational design needs to be adaptive to maintain effectiveness (Traon et al. 2019).

Another issue to consider when exploring dynamics of producer organisations is how they interact with other organisations. Key relationships can include those with buyers, support service and input providers, and other producer organisations. Each are discussed below.

As mentioned above, building strong relationships with buyers can be a benefit of creating a collaborative organisation. Producer organisations can build long term relationships with buyers which can help with gaining strategic insight into buyers' demands and future growth areas (Traon et al. 2019). These relationships can also involve buyers providing training and investing in innovation at the production level.

Benefits related to increased bargaining power can vary based on the characteristics of the producer organisation (Traon et al. 2019). In some cases, it can be low. However, it can improve as organisations mature and grow. Additionally, when relationships persist over time, producers can learn more about their buyers (Traon et al. 2019). For example, they can know when the buyer is growing and when the buyer is struggling, which can help with internal decision making.

Producer organisations can also have diverse relationships with suppliers and service providers. These relationships can also be long term and built over time. Additionally, they can also be good sources of information flows. Moreover, producer organisations can also be a conduit to receive services provided by government actors and NGOs. In some cases, these services can be targeted at increasing group cohesion. In other cases, they can offer different types of support for producers.

Finally, producer organisations can have relationships with other producer organisations. In some cases, this can be a formal process through the creation of federations. Such relationships can help to share learnings between organisations and create a larger voice which can be used in shaping issues in the ecosystem. Additionally, relationships between producer organisations can facilitate peer-to-peer learning (Ton et al. 2007).

Key Factors Supporting Success

Collaboration is not a one size fits all process. Diverse forms of collaboration can be successful depending on the context and the purposes of the collaboration (Traon et al. 2019). However, some general best practices can be identified. Box 5 provides an overview of activities that have been involved where collaboration has been successful in the past. Depending on the circumstances, these are practices that can be incorporated by emerging collaborations.

Box 5: Lessons from Successful Collaborations

• Smaller groups of similar people with clear objectives and high levels of trust • A large enough size to achieve economies of scale • A system which provides economic benefits • Members believing that benefits outweigh costs • Adequate support available • Clear rules and responsibilities • Regular meetings • Clear communication that meets members' needs • Legal status enabling access to public services • Support with developing formal structures • Local traditions of cooperation	• Supportive local policies and institutional environment • A governance model (organisational form) that matches the organisation's objectives • Opportunities for members to influence decision making • Capability to take consensual decisions • Willingness of members to cooperate • Trust and loyalty in the producer organisation • Shared ideology • Help with finding partners

Sources: Kroft 2006 as cited in Bijman 2007; Rani 2008; Traon et al. 2019

3.2.2 Vertical Collaboration: Value Chain Governance Models

While the types of collaboration that were discussed above can be considered as horizontal (coordination between producers), producers can operate in value chains that have diverse governance structures (vertical coordination). This section highlights examples of value chain governance systems that are being used in situations with small-scale artisanal production within India and globally. Types of governance models that are discussed include buyer led, third party led, and self-governed.

Buyer Led

Buyer led value chains are very common for light manufacturing (Gereffi 1999; Gereffi et al. 2005). Through these relationships, large companies, such as global retailers, play key governance roles for producers. For lead firms (brands or retailers) as governance actors, their relationships can incorporate two dynamics that are in tension with each other. On one hand, buyers are trying to receive the best input for the lowest price. On the other hand, in some cases, buyers are attempting to play a developmental role in helping their suppliers to upgrade. Alternatively, buyers leading production processes can be intermediaries that play different roles than lead firms acting as key governance actors.

Buyers Creating Downward Pressures

Exemplifying the first dynamic, some buyer-producer relationships can be considered as purely commercial. These may be short-term (e.g., single transaction relationships). However, even in longer relationships, lead buyers in value chains often put high levels of pressure on their suppliers. Pressure can involve buyers creating constant demand for lower prices and being willing to quickly switch suppliers if lower prices become available. This dynamic has been seen as creating a 'race to the bottom' in which producers feel extreme pressure to lower production costs in ways that create poor working conditions and environmental damage. While some lead buyers at the top of value chains have been incorporating sustainability standards, which may have a stated purpose of counteracting downward pressures, these standards can also result in creating increased pressures on producers, such as increasing costs of production. In some cases, these increased costs can be detrimental to working conditions and they can also raise barriers to entry. Despite challenges emerging from a buyer-driven model, in some cases, producers that are able to supply to more demanding external markets, through selling to demanding buyers, can learn new skills and consequentially upgrade their businesses (Humphrey and Schmitz 2002; Giuliani et al. 2005; De Marchi et al. 2018).

Pottery Barn
Pottery Barn is a US furniture and home décor company. It sells a variety of items that are made from bamboo, such as bowls, plant holders and blinds. The company has retail stores in the United States, Canada, Mexico, and Australia. Their parent company William Sonoma has formal standards for producers outlined in their Vendor Code of Conduct and accompanying implementation standards. Pottery Barn also has a goal to expand their use of sustainably sourced raw materials.

Source: Williams-Sonoma 2020; Bringle 2022; Pottery Barn n.d.

Buyers as Development Actors

Involving a different type of dynamic to the predominant commercial dynamics found in value chains that are led by large brands and retailers, a second type of buyer-producer relationship incorporates non-

commercial objectives and can involve the buyer acting like an NGO or having a project that functions as a social enterprise. In these sustainability-focused relationships, lead firms are increasingly trying to play more supportive roles for producers. Notably, when this type of role is played by a conventional lead firm (see Pottery Barn case above), relationships attached to such objectives can involve different staff members from the buyers' organisations compared to their conventional supplier relationships, such as those from a corporate social responsibility department. In other cases, this type of role is played by lead firms that have specifically value-driven enterprise themselves, such as a social enterprise (see EZA case below). Lead buyers can help producers to upgrade their processes in multiple ways, including related to production skills, labour standards, and environmental impact.

EZA

EZA is an alternative trading company in Austria. They import handicrafts using Fair Trade terms and sell them in Europe. Specifically, their model involves:

- promoting humane working conditions and ecological production methods
- offering fair payment
- seeking to create market access for small farmers' organisations and artisans
- ensuring transparency in production and trading conditions
- spreading the concept of Fair Trade

Recently, they were involved with incubating a new coffee brand Adelante, which is produced by female small holder coffee growers in Honduras and Peru.

Source: EZA Fairer Handel n.d; Doherty et al. 2020

Intermediaries as Key Governance Actors

A third type of buyer-led relationship can involve traders or intermediaries being key governance actors (Bitran et al. 2006; Fung et al. 2007; Zacharia et al. 2011; Soundararajan et al. 2018; Serdijn et al. 2020). Intermediaries can be individual traders, larger businesses, other organisations (e.g., NGOs), or online platforms. Local traders currently play a governance role for many bamboo producers. In some cases, traders are selling to large formal buyers, of the type described above. In these cases, they may create pressures on producers based on both commercial and non-commercial requirements of these buyers. In other cases, traders may be selling to diverse markets with less stringent requirements, such as larger traders or small domestic retailers. Intermediaries as governance actors can be conduits which share valuable information with producers and help them to develop. However, intermediaries can also create barriers to information flows.

Third Party Led

An alternate model for value chain governance can be found through being third party led. This governance model involves a non-commercial actor playing a strong governance role which shapes the activities of producers. For example, third parties can include government agencies, NGOs, universities, or multi-stakeholder groups (see ESAF example in Artisanal Bamboo Production in Assam, Odisha and Jharkhand case above). These organisations can have objectives related to supporting economic, social, or environmental development of producers. Third party led governance can involve the third party actors playing the role of intermediaries. They can help to connect producers to buyers, input suppliers, and support services.

A challenge can be that, in some cases, these organisations may not have the skills needed to adequately support producers' needs. For instance, they may specialise in technical skills but lack sufficient knowledge related to marketing. In cases where third parties are providing valuable support to producers, if these organisations intend to end their support at some point, they should try to ensure that producers are responsive to market dynamics and have the skills and motivation to take over the tasks of the third party when they leave.

Mahaguthi

Founded in 1984 by a non-profit foundation, Mahaguthi is a Nepalese social enterprise that reinvests all of its profit into supporting producers and communities. It produces a range of products that include items made from felt, textiles, and paper. Production is conducted in-house and through a network of 60 producer groups. The company has annual sales around one million USD through two shops in Nepal and exports to Australia, New Zealand, Japan, Korea, USA, Canada, and others. This is a value-driven enterprise that has a board that is able to focus on a social mission without having to consider shareholders. At times this has allowed them to source from communities that require investment and support.

Source: Doherty et al. 2020

A variation on third-party led value chains can be found in some multi-stakeholder governance models. In some cases, these involve a non-commercial actor partnering with a lead buyer. This governance form can bring together aspects of both buyer led and third party led governance. This model can potentially address challenges that are often found in buyer led and third party led models. However, it can also result in a compounding of the challenges created by each model.

Self-Governed

Producers working in value chains can also be self-governed. In this model, producers do not rely on one (or few) major buyers or external governance actors. This type of model may be preferred by producer organisations that are value oriented and want to pursue internally-driven objectives. Producer organisations that are value-oriented have been found to have lower levels of coordination (Groot Kromelinck et al. 2019). Notably some value-oriented organisations prioritise selling in local markets as opposed to selling to intermediaries.

Manos del Uruguay

Manos del Uruguay is a Uruguayan fashion company that is owned by 12 women-run producer cooperatives. It has a board that is made up of artisans. The company sells items under its own brand and act as a private label producer for other companies. They have an online retail store and carry out branding and marketing.

Source: Doherty et al. 2020

Determination of Governance Model

When producers are involved in collaboration, they can function through any of these three governance models or a combination of them. Less coordinated production may have more diverse governance systems. More coordinated production may have a more streamlined governance system.

Each form of governance can be seen as being better suited to different circumstances. Buyer-led governance may be more likely if producers have existing skills that fit into buyers' needs. However, in some cases, buyers will provide capacity building support when this prerequisite is not met. A key risk with this approach is that buyers can benefit at the expense of producers.

Compared to other types of suppliers, producer organisations face distinct challenges from joining buyer-led value chains (Bijman 2007). One is that when they experience pressure from demands of buyers, they have to balance these pressures in conjunctions with the objective of ensuring good outcomes for their members. This can change how management reacts to buyers' pressures.

A second type of challenge is that the decision-making processes of producer organisations can be different than those in traditional enterprises. One issue is that decision-making processes can be slow when collective input is sought. A second issue is that collective decision-making tends be rather risk-averse, which can lead to a lack of making investments that are necessary to become or remain preferred suppliers for large buyers. For producer organisations that have a separate management team and board, commercial pressure can create a situation where the management team has to act quickly and the board is left to review the decisions after the fact.

A third challenge is that a market-oriented focus can detract from focusing on producers' needs. This can result in members losing their commitment and lead to efficiency problems. One challenge is that members may be less likely to invest in the producer organisation. Another challenge is that communication and information flow problems may occur. A further problem may be that members may leave the organisation. A lack of commitment may also create problems with decision making. In addition, low commitment may degrade the maintenance of common norms within the organisation. Furthermore, low commitment may lead to an increase of opportunistic behaviour or free riding.

A fourth challenge is that heterogeneity in membership can create challenges when seeking to fulfil large buyers' orders. Members may have different skills and all may not be able to create products that match the changing demands of large retailers. Furthermore, heterogeneity can also lead to increased problems with internal decision making.

Being third-party led requires a third-party to take an active interest in supporting production. This type of model can be very successful but can also depend on capabilities and strategies of the third-party.[13] A key challenge can be that third parties may not have the needed commercial skills or connections to support business development. Another challenge can be that producers can be overly reliant on a third party and unable to maintain ongoing operations if the third party pulls out.

Finally, self-governed can be an option for any group of producers. However, the model can be difficult to manage without external support from a buyer or other third parties. It requires producers to have or develop the needed capabilities to access target markets. Developing these skills can be particularly challenging when producers are located in remote locations, with limited direct exposure to potential markets.

[13] Recommendations for third party actors can be found in Chapter 4.

3.3 Conclusion

This chapter has identified diverse options for development trajectories for India's artisanal bamboo industry. Different options may vary in their suitability for each producer or producer organisation. While a range of markets are available, they require specific capabilities to access. Access is also shaped by market demands and the nature of competitors.

Regardless of the markets that are targeted, individual artisans can benefit from collaborative approaches. Difficulties in cooperating are identified in this chapter and best practices are highlighted. However, the specific type of cooperation that may work best for each situation can differ.

Furthermore, different value chain governance structures which can shape producers' experiences are identified as including buyer led governance, third party led governance and self-governance. Buyer led and third-party led governance can involve receiving outside support and guidance. However, these approaches can result in loss of autonomy and pressures to take decisions that are not necessarily in producers' best interests. In some cases, producers can experience a combination of these governance models. Self-governance has many benefits. However, it also has high skill requirements, which can be a barrier for artisanal producers working in remote locations with underdeveloped innovation systems.

The range of options that are discussed in this chapter present diverse options that can be pursued by India's artisanal bamboo producers. However, these need to be considered along with the baseline of artisans' current situation that was discussed in Chapter 2. Considering these dynamics, Chapter 4 presents a range of policy recommendations that can help India's bamboo artisans to explore alternatives which are available to them and to decide how to best access new opportunities.

4. Governance for Green Job Creation in India's Artisanal Bamboo Industry

India's artisanal bamboo industry currently functions through a system that creates low levels of income for mainly micro- and small-scale producers, while creating low levels of employment. Multiple opportunities exist for this industry to grow and generate higher levels of income and employment. Increasing the use of bamboo can also generate multiple environmental benefits. Considering the strengths and weakness of India's bamboo industry that were discussed in Chapter 2 and the market and organisational options that were covered in Chapter 3, this final chapter outlines key opportunities for governance actors to promote green job creation and identifies intervention strategies related to achieving these opportunities.

Four key governance opportunities are supporting producer upgrading, encouraging producer collaboration, facilitating links to new markets and restructuring governance systems to support overarching improved dynamics in the production ecosystem. Diverse governance actors in India and abroad can help to realise these opportunities. Key governance actors include local and national government agencies, NGOs, donors, lead firms, technical institutions, and universities. Potential strategies that governance actors can use for realising each opportunity are discussed below.

4.1 Supporting Producer Upgrading

In order to access new potential markets, bamboo artisans need to upgrade their businesses, both in terms of how they are organised and the products they produce. Artisans' current business models are shaped by multiple factors. These can include suffering from a deficit in skills and resources, the development of routines that are not optimised for potential target markets, and a lack of information about different production models.

Product upgrading can involve changing the physical features of a product, the values associated with the product (e.g., marketing strategy), and providing additional services. Process upgrading can take diverse forms. One aspect can be changing how businesses are managed, such as joining a collaboration (see Section 4.2). Another aspect can be changing how production processes are organised, which can also be influenced by joining a collaboration. Businesses can also change how they are positioned within value chains. This can, for example, involve connecting to new types of buyers (see Section 4.3).

One aspect of upgrading can be moving into more industrial-scale production models. If individual enterprises or producer groups grow, wider benefits can be felt in the local community. For example, more income could enter the locality, job creation can grow and producers can contract local businesses as subcontractors and suppliers.

Regardless of the reasons for current production models, many producers need access to better quality equipment in order to lower costs and improve quality. Additionally, being able to produce products with methods that are commercially viable for new target markets will require adequate technical, design and business skills. All of these skills do not need to be developed by each individual artisan. Through cooperative practices, specialised tasks can be carried out by different people or groups (see Section 4.2).

Governance actors can address producers' lack of resources, skills, and use of more efficient processes in several ways. They can create awareness of best practices. They can also be involved in more direct interventions, which can involve increasing external provision of inputs and services as well as seeking to enhance artisans' own abilities. However, an important factor to consider is that local norms can make bamboo producers reluctant to engage in changes to their behaviours in ways that can facilitate upgrading (Lund-Thomsen et al. *forthcoming*). For example, women workers who work part-time may not be interested in working full time. Also, artisans may not trust external service providers.

Furthermore, a key issue is the cost of providing support for producers to upgrade. Business development services can be provided for a fee to producers or through loans (with low or no interest). A benefit of charging for services is that it can help to recoup costs of service provision and also ensure that those who are receiving the support intend to make use of it. However, in some cases artisans may not be willing to pay or able to afford the full costs of services. To enable service delivery, funding for such activities can come from multiple sources, such as donors or government budgets.

4.1.1 Promoting Specific Activities that Have High Potential Gains

Governance actors can seek to identify particular changes to production practices that could help producers. With this knowledge, governance actors can then seek to make producers aware of particular upgrading activities that could be beneficial. In addition, governance actors can take actions to more directly shape how businesses operate (see Section 4.1.4)

Potentially beneficial changes that that can be made by producers can be specific to different locations, particularly as they can be related to making changes to commonly used practices. Additionally, the changes needed will be shaped by the type of product and market that producers are targeting. However, some generally applicable best practices can be identified.

One process modification that has high potential to help many producers become more efficient is to change what is done with "waste" materials. Currently some parts of bamboo are used for household fuel. These parts can instead be used for productive purposes (Invest India 2021). Artisans can be taught about alternate uses for these materials, which can generate additional income streams.

Additionally, opportunities exist for developing enhanced finished processes. Finishing can help to correct faults that arise during manufacturing and add additional value (UNDP 2018). This can include packaging. Advanced finishing tasks can be carried out or facilitated by diverse actors, such as producer organisations, contracted service providers, or common facility centres. Another consideration is to make designs that can be shipped more easily. For example, making products stackable can reduce transportation costs (I42).

A further opportunity for some producers may be found in obtaining certification. Potential certifications may be related to different aspects of production, which can cover elements including product quality or sustainability (e.g., ISO standards, fair trade related standards, or environmental standards, such as organic). While certification may not be feasible for individual artisans, it may be possible for producer groups or for larger enterprises. Additionally, if larger enterprises or producer groups can increase their sales through certification systems, this can create opportunities for additional producers who may be able to act as subcontractors. Certification schemes that may be particularly beneficial could include those

with tripartite governance models, that incorporates a lead firm and a third party governance actor (e.g., a community organisation or a technical NGO).

Finally, governance actors can also specifically seek to promote innovation among producers. This can be done through running contests or by building connections between producers and other innovation system actors, such as design institutions and customers. Furthermore, as with the other suggestions in this section, it can also be the focus of capacity building programmes (see Section 4.1.4).

4.1.2 Increasing Availability of Inputs

Another way that governance actors can help producers to upgrade is seeking to ensure that they have consistent access to better quality inputs. Needed inputs include raw materials, technology, funding, and human resources.

Bamboo Inputs

One issue is the structure of bamboo markets. The supply of bamboo needs to be made more accessible for some producers. A key issue is that despite the large levels of domestic production, India still imports large amounts of bamboo. For bamboo that is collected from forests, policies could be made to facilitate easier access. This can include modifying regulations and enforcement of regulations related to forest access. Farmers and individual households can be incentivized to grow more bamboo through the creation of more stable markets through government intervention. A key opportunity exists in growing bamboo on land that is not currently being used for productive purposes.

Additionally, governance actors could seek to improve the quality of domestically produced bamboo. To achieve this objective, governance actors could work with users and traders who are currently importing bamboo to understand what they are missing in India's domestic bamboo. Actions could include promoting improvements in how naturally regenerated bamboo is managed and harvested and promoting enhanced bamboo cultivation techniques for farmers and other growers.

Another specific type of intervention is the creation of primary processing centers (which are being set up with the assistance of the NBM). These centres can be a way to ensure high quality bamboo inputs. They can facilitate chemically treating bamboo before selling it to make it easier for artisans to work as they would not need to set up their own treatment operations. In addition, bamboo that is treated soon after harvesting is better preserved, resulting in a higher quality product. Moreover, this can create an opportunity for job creation. These centres can also facilitate more efficient grading of bamboo supply. Expert guidance can help to ensure that the premium parts of the bamboo are not used for the bulk processing industry and instead channelled to manufacturers of higher value products (Tambe et al. 2020).

Governance actors can also seek to introduce new forms of bamboo inputs. While traditional ways of making bamboo products in India are diverse, new material processing techniques have been developed, which can expand the range of products that are created (UNDP 2018). These include bamboo wood and bamboo composites. Expanding these industries within India can give bamboo artisans access to new inputs through creating the option to use processed bamboo as a raw material as opposed to fresh bamboo, which could provide new opportunities. For example, standardised inputs (e.g., flat bamboo panels) could make it easier to make modular bamboo furniture that could compete against modular

wooden furniture. Additionally, these products can appeal to customers who perceive traditional bamboo furniture to be of inferior quality.

A final issue to consider, in relation to the supply of bamboo, is environmental and social sustainability. Currently most of India's bamboo is grown in naturally regenerating areas and contributes to local ecosystem services and creating green cover. Expanding the commercial uses of bamboo needs to be done through methods which do not damage the natural environment, such as monocropping and applying harmful fertilisers and pesticides. Ideally, collection from forested areas can happen in a managed way that helps artisans while using environmentally friendly processes. Furthermore, developing the bamboo trade can also be an opportunity to support the creation of new jobs in the regions where bamboo artisans are located and good jobs are in low supply.

Production Equipment

Another challenge facing bamboo artisans is a lack of adequate processing equipment. Governance actors can promote the development of machine supplier businesses or subsidise purchasing of production equipment. Additionally, equipment can be made available through CFCs. Also, design and technology institutes can help to design improved tools for working with bamboo (Gupta 2021).

Storage Facilities

A critical challenge is that artisans often work in situations with a lack of adequate storage facilities. Consequently, even well-made products can be damaged during the storage phase or artisans will be inhibited from producing additional items because of lack of storage space. Governance actors can seek to assist with this situation by subsidizing the creation of individual storage units or creating communal storage facilities, which artisans can easily access.

Finance

Bamboo artisans and producer organisations can also benefit from increased access to funding. Following the success experienced during FMC's intervention, governance actors can continue to help build connections with financial institutions, microfinance schemes, donors and other organisations that can provide funding to bamboo artisans. Additionally, new funding mechanisms can be developed. For example, a micro venture fund could be created to support high risk innovations in the bamboo industry (Gupta 2021).

Skilled Labour

While artisanal bamboo producers rarely hire labour, the creation of producer organisations creates opportunities for new job creation. The jobs that are created can be diverse and may require more advanced managerial, administrative, production, marketing, and other skills. Connections need to be made between people with these skills and bamboo collaborative endeavours. For example, creating fellowships for higher education students that link them with bamboo businesses (Gupta 2021). Additionally, training can be provided in bamboo growing regions to help to create the needed skills among local populations.

4.1.3 Increasing Availability of Business Services

To address skill deficits in production regions, another type of governance intervention is to increase the availability of service providers. Services that can be needed include marketing, accounting, legal, packaging, finishing, transportation, and storage. Governance actors can encourage existing service providers to operate in regions with bamboo artisans. Additionally, they can provide subsidies for producer organisations, or individual producers, to access these services. A further way that governance actors can increase the availability of services is by training new service providers. These can be local expert craftspeople. Alternately, governance actors can directly provide services that are needed by bamboo artisans.

Governance actors can also support producers by making them aware of available support services. These can range from training opportunities to potential sources of funding. They can also act as a conduit in making connections between producers and support service providers.

One type of support that governance actors can provide is to help with managing a producer organisation (i.e., providing third-party leadership). This can be helpful when producers have limited management skills. Assistance can be provided with aspects such as registration forms, record keeping, and coordinating production activities, including providing quality control services.

Additionally, service providers can keep abreast of relevant developments and keep producers updated. Support service providers can carry out or access existing market research. Information shared can be related to customers, suppliers, new product types, prices, and quality expectations.

Service providers can also help with marketing, including introducing new designs and brand development that can be competitive in target markets by increasing the value of products and creating customer loyalty. Moreover, they can also help to get producers certified by standards that might appeal to target customers, such as quality, labour or environmental certifications. Supporting such upgrades can help to increase the price-point of artisans' products. Furthermore, governance actors can help advertise producers' products and make connections with potential buyers. This can be done through bringing them to trade fairs or exhibitions, organising buyer-seller meets, or through other marketing forums, such as the activities of the state marketing agency in Odisha, ORMAS.

Finally, another service that governance actors can provide is the use of CFCs. When artisans work independently, many processes are done with low tech tools by each artisan. Economies of scale can be created by investing in shared equipment that can be more efficient and can help with improving quality. Activities that can be carried out at a CFC include treating raw bamboo, design, finishing, packaging, storage, marketing, and exporting (UNDP 2018).

However, while external support can be helpful, Bijman et al. (2007) caution against producer organisations becoming overly reliant on external support. If a producer organisation is dependent on external support, it can create a weak sense of ownership among members, which can be connected to low levels of commitment; low accountability of management; and difficulty with maintaining member-driven control. Also, as mentioned above, charging for services can be a way to make producers perceive them as more valuable.

4.1.4 Capacity Building

Alternatively to directly providing the services outlined above, governance actors can help producer organisations to build the related skills to carry out these practices themselves. Capacity building can be targeted at the level of producer organisations or at individual producers. It can take many forms. These include workshops, consultancy services, organised visits to advanced production facilities, formal courses, business incubators, and supporting the employment of new staff with needed skills. Capacity building programmes can also be offered through diverse mediums, such as in-person learning, online videos, or through apps. Involving buyers in training programmes can be helpful (Lund-Thomsen et al. *forthcoming*).

An important issue to consider is that capacity building can require time. Changing behaviour can require more than one short workshop. A further issue to be aware of is that capacity building may promote practices that are not in line with local norms, which can also create challenges (Bijman et al. 2007). Furthermore, as with the provision of business services, training programmes can be perceived as more valuable if participants are required to make even a highly subsidized payment.

Capacity building initiatives could have diverse targets. One way to determining capacity building needs is to carry out a needs assessment. Some key options for topics that may be helpful include management and administrative skills, production skills, obtaining certification, financial literacy, OSH, and innovation (see Section 4.1.1).

Management and Administrative Skills

Individual producers typically are micro enterprises and do not have formal management training. When producer organisations are created, they may be led by local artisans or involve hiring people with management skills. In cases where the leadership of a producer organisation does not have sufficient skills to run the organisation, governance actors can help to provide management training, as well as training related to other administrative and office-based tasks that may be necessary for running a producer organisation. Key skills can include doing market research and best practices for interacting with buyers. Additional topics can include production planning, exporting, and how to have a voice in the development of regulations. Capacity building related to management and administrative skills can be slow and require long-term support (Bijman et al. 2007).

In terms of having a voice in public policy, producer organisations can also benefit from training. Policy makers and administrators are often more likely to listen to the demands of urban constituencies and large businesses, which means that it can be hard for small producers to have their voices heard. While collaboration can help producers to have a louder voice, producer organisations need to explicitly focus on developing strong advocacy skills. To address this issue, governance actors can support producer organisations with participating in public consultations and other forums where they can share their perspectives (Bijman et al. 2007).

The choice of market that a producer organisation will target will shape the types of skills the organisation will need to be successful. Selling to global retailers can require highly coordinated production management. This route may require hiring professional management. In this situation, tensions can arise (Bijman et al. 2007). There may be disagreements between the artisan leaders and a new manager. Additionally, to meet the obligations of formal contracts, producers will have to adhere to quality and

quantity obligations, which may lead to a more contractual relationship with the producer organisation. Also, tensions can arise between producers with different production capabilities and different priorities. A further challenge that can occur related to supporting the development of management systems is that the economic priorities involved may conflict with other value-related purposes of a producer organisation. One solution to this issue can be to separate the commercial and marketing activities out of the main organisation, while maintaining an internal focus on other priorities, such as social issues (Bijman et al. 2007).

Production Skills

India's bamboo artisans have the skills to create diverse bamboo products. However, to access new markets, new designs, improved quality, and greater consistency of products can be needed. Production training and other forms of production-related capacity building should be in line with the requirements of targeted potential buyers.

Obtaining Certification

Achieving third party certifications can provide diverse benefits. For example, they can help producers to enter new markets or to receive higher prices. Additionally, such programmes can help to address sustainability challenges, such as health and safety risks. Support programmes could be provided that could help bamboo artisans to meet the requirements of certification programmes that may be appealing to target buyers or have elements that could provide internal benefits for producers. As mentioned above, in some cases, it can be easier for producer groups to obtain certification, as opposed to individual producers (see Section 4.2).

Financial Literacy

Another important issue is financial literacy. While in some cases, producer organisations may manage the overall finances of an endeavour, individual producers still need to have financial literacy. Training programmes can cover banking, accessing loans, and repaying loans.

OSH

Finally, another key area that capacity building programmes can focus on is OSH. Training can cover production techniques and precautions that can be taken to minimise risk. Such support can help to improve the long-term health and well-being of bamboo artisans.

4.2 Encouraging Producer Collaboration

India's bamboo artisans often live in close proximity and share common needs (UNDP 2018). This paper highlights the benefits that can be achieved when artisanal producers collaborate. These benefits can come from economies of scale, learning and developing, and increasing power. Notably, collaboration can also help to create new jobs.

Collaboration can take diverse forms. The exact form that will suit a particular group depends on the group's characteristics, their goals, and their context. Several key issues can be considered related to

collaboration. One is how should a collaboration be managed. Should the collaboration be formal or informal? How should decisions be made? Group members need to see the ongoing benefit of a collaboration for a group to sustain. However, in some cases, short term cooperation can be helpful. Artisans often collaborate informally in their villages. It is important to consider whether there are benefits of creating more formal collaborative organisations.

A second issue to consider is where collaboration can specifically help. There is a cost of collaboration. Interventions need to incentivise change and producers need to change the way they work. These can be difficult processes. It can be helpful to identify specific tasks that could be the focus of an intervention. For example, should collaboration focus on procurement, manufacturing (or one specific element of manufacturing), or marketing? It is important to consider the costs and benefits of collaborating on any particular activity.

For any activity that can be done collaboratively, a question to consider is what is the optimal mix of cooperation versus competition? What are the pros and cons for each potential area of collaboration? How can the right balance be achieved? Sometimes individuals working in collaborations may have a strong entrepreneurial drive. It is important to consider whether their participation can help the group to succeed, or whether they would be better off working on their own.

Additionally, another consideration is the ideal for a collaborative group. The best size for a group can depend on the specific activities that are involved in the collaboration. For example, hundreds of artisans can use one CFC. However, for joint liability groups for loans, smaller groups are more effective. A related consideration is that if collaborations for different activities need to involve different sets of people, how do individual artisans navigate such a system. One artisan cannot meaningfully participate in an unlimited number of groups.

In addition to considering these important questions about what forms collaborations should take in different circumstances, it is also important to consider how to promote collaboration. Diverse strategies can be identified. A variety of options are outlined below.

One action that governance actors can take is to bring together groups of producers to develop new collaborations. For example, this may involve arranging for third party actors to act as facilitators. This tactic is difficult, as past experience has shown that externally initiated collaborations have less chance of success. However, it is not impossible. Interventions can draw from best practices related to group formation. Additionally, they can take care to make sure that emerging producer organisations are responsive to market requirements as opposed to solely relying on third party support.

Governance actors can also create incentives that can promote collaboration amongst producers. These could involve making forms of support available to producer organisations. For example, incentives could include loans, subsidies, or training that are only accessible if producers form a group. However, it is important to consider that groups that are formed in order to receive external support may be less stable and long-lasting than groups that are formed due to other motivations.

Another action that governance actors can take is to identify and disseminate information on opportunities for bamboo producers to benefit from collaboration. In order to increase the chances of success for collaboration, the potential benefits should be clearly articulated and promoted broadly. For example, those related to accessing better quality inputs, receiving training, access to funding, and power

to negotiate. Such information can be shared with existing, new, and potential collaborators. Information can he shared using diverse methods, such as through social media, radio, or community events.

Finally, governance actors should seek to ensure that the policy and regulatory environment makes it easy for producers to collaborate. The creation of the Producer Company model in India has been a good step in this direction. Smaller actions can also be beneficial, such as reducing and simplifying paperwork and processes that producers need to engage in a formal collaboration.

4.3 Facilitating Links to New Markets

While many bamboo artisans currently produce for local markets, opportunities exist for selling to more diverse buyers. Producers can connect to a range of existing market opportunities that can provide higher sources of income. Additionally, governance actors can seek to promote growth of demand for artisanal bamboo products.

4.3.1 Accessing Existing Markets

Bamboo artisans can target a diverse range of markets (as outlined in Section 3.1). The decision for choosing the right market to focus on can be helped by considering a number of factors. These include the needs of the market and the capacity of the producers. Important issues to also consider are emerging trends and the nature of the competitive environment in the target market. Competition can come from other producers of bamboo products as well as from products made from other materials, such as timber, plastic, or steel.

Governance actors can help producers with connecting to target markets through a variety of interventions. To reach new markets, producers may need new skills and products. Governance actors can support producers to undertake the needed upgrading (see Section 4.1).

Additionally, reaching new markets requires producers to have knowledge of these markets. To build channels of information flows, governance actors can conduct market research and share market information with producers. This information can be shared through multiple forms, such as creating market forecasts, running workshops, and spreading awareness through local governance actors.

Finally, accessing new markets requires having sufficient communications and transportation infrastructure. Governance actors can seek to ensure that adequate infrastructure and related services are available to bamboo artisans. This can also involve educating producers about transportation options.

At a practical level, artisans may benefit from training on skills for accessing new markets. Particularly, digital marketing practices may be important. For example, valuable skills can include how to post products on websites and how to use electronic sales interfaces. Learning about such practices may be helpful for artisans with high entrepreneurial ambitions or producer groups.

Additionally, governance actors can seek to directly create connections between producers and potential buyers. This can take multiple forms. Options include organising trade fairs, arranging buyer-seller meets and facilitating online sales platforms. Governance actors can also work through traders, who already have connections to producers, to help create connections to different types of buyers.

Another option that governance actors can take is directly help with promoting bamboo artisans. This could involve creating a certification or branding scheme. Such a scheme could focus on diverse elements and could include quality, social or environmental aspects. A branding exercise could also benefit from the creation of a bamboo marketing institution.

4.3.2 Building National Demand for Bamboo Products

Another way to expand market access is to build national demand for artisanal bamboo products. Demand for bamboo products in India has room to expand in several ways. A key opportunity is that bamboo products can replace products which are created by other materials, such as plastic and metal.

A challenge is that bamboo products are currently associated with some negative perceptions within India. These include products being old-fashioned and poor quality. At the same time, the national market for products that could be made with bamboo is growing. To increase reach into the domestic market, the following recommendations can help make potential customers more likely to buy bamboo items.

One way to increase demand can be through educating potential customers on the benefits of bamboo over other materials. These benefits can include the qualities of bamboo products themselves and the benefits of supporting domestic bamboo artisans (e.g., environmental and social benefits, such as reducing poverty and supporting local craft traditions). Public perceptions of bamboo can be improved through advertising campaigns. Additionally, bamboo products can be given prominent places at exhibitions and trade shows, which can also provide information about the strengths of bamboo.

National demand for bamboo can also be increased through augmenting the level of domestically produced bamboo products in large-scale orders, such as those made by government agencies and businesses. Policies can encourage and require such buyers to actively seek to buy local bamboo products to support bamboo artisans. For example, in 2010, the Philippines mandated that 25% of all school desks should be made of bamboo (UNOSSC and INBAR 2017). Another option could be to have regulatory changes in building codes or other incentives, such as using taxation rates to promote bamboo.

4.4 Restructuring Governance Systems to Support Overarching Improved Dynamics in the Production Ecosystem

Finally, each governance actor plays a role in shaping the overall governance system that producers work within. Governance actors can take actions to modify the production ecosystem in different ways. Many of the actions described above contribute to this objective (e.g., promoting the increased availability of inputs). However, individual actors cannot transform the industry by acting on their own. Additional overarching strategies can be identified. These involve changing the balance of power between different actors in the production network, increasing coordination between governance actors, and ensuring a supportive policy environment.

4.4.1 Changing Structures and the Balance of Power in Links to Production Networks

The current production network for many bamboo artisans often leaves individuals relatively isolated with limited power. A major problem is that small-scale artisans are often cut off from direct contact to markets through the involvement of intermediaries and a lack of information conduits. Governance actors can seek to change network structures through multiple approaches.

Governance actors can purposefully seek to create changes in the production networks that producers are linked with. A key action can be to support the creation of production organisations (see Section 4.2). As described in Section 3.2.1, larger groups can give producers more power when dealing with external actors.

Governance interventions can also seek to shorten the number of links in value chains. Interventions can specifically try to bypass intermediaries and connect producers more directly with buyers. However, this type of approach has to take into account the roles that were being played by intermediaries in the past and make sure the new system is still viable.

Governance actors seeking to support bamboo artisans can also provide management support to producer groups, creating third party led production models, which involve engaging in high levels of coordination. This could involve developing new organisations that play direct roles in the production network. For example, they can set-up socially driven intermediaries. These new intermediaries could play diverse roles. A potentially effective format is acting as a coordinators and quality control node while dividing the production of large orders among household enterprises (see ESAF example in Artisanal Bamboo Production in Assam, Odisha and Jharkhand case above). In addition, governance actors can also bring in large buyers to form multi-stakeholder governance models. These models have potential to improve producers' outcomes and support job creation. However, these models also have potential challenges, particularly as producers can become overly reliant on external actors (see Section 3.2). As a choice of governance intervention, another potential pitfall of this strategy is that it concentrates the governance actors' efforts on a selected group or producers, potentially at the exclusion of others.

Alternatively, governance actors can seek to increase coordination and information sharing between existing actors in the production network. The current situation, with many bamboo artisans reliant on traders for their sales and access to market information, leaves these producers relatively isolated from global production networks. Building communication channels between producers and different types of buyers can help to facilitate better information flows and create more options for the producers.

4.4.2 Increasing Coordination Between Actors Seeking to Support India's Bamboo Artisans

Currently, the Indian bamboo industry is not very coordinated. The system has inefficiencies and missed opportunities. Governance actors can actively seek to improve coordination to make available resources have the most impact.

One way to improve coordination is to seek to align the actions between diverse governance and support actors. This can involve developing a central registry for actors supporting India's bamboo artisans. This overview of interventions could help to ensure that actions are not duplicated and that different projects complement each other.

Additionally, the global donor and NGO community has high levels of experience with working with producer organisations. While each situation is different, lessons learned in other contexts can be valuable in new places (Bijman et al. 2007). This report seeks to bring together experiences that have occurred during FMC's bamboo intervention and lessons learned from available published materials to provide insights relevant for India's artisanal bamboo industry. Further information sharing could take place through dialogue between governance actors, such as that which has been developing through the work of FMC, the NBM, and the India Bamboo Forum.

4.4.3 Ensure a Supportive Policy Environment

Finally, another way that governance actors can help to support producers' outcomes and job creation in the artisanal bamboo industry is to ensure a supportive policy environment. One aspect of this is the provision of direct support by governments, through activities such as providing training and financing. Another aspect is indirect support.

Indirect support, in the form of creating a supportive policy environment, can strengthen producer organisations' ability to compete (Bijman et al. 2007). This can be done through activities that make markets run more effectively. Additionally, in some cases governments can shape the markets to advantage domestic producers, such as by increasing import duty on bamboo products (UNDP 2018). Furthermore, they can ensure that the judicial system runs well and that small producers feel secure.

Another area of concern is legislation and policies specifically related to regulating producer groups. Such regulation can shape issues such as whether the group can borrow money and enter into contracts. It can also determine the rights of members. A concern related to this issue is the administrative burden that is placed on individual producer organisations. Governance actors can seek to ensure that bamboo artisans are not overburdened with administrative activities (e.g., paperwork) and can focus more energy on their craft, as was mentioned above in relation to making it easy to registers groups (see Section 4.2).

Furthermore, governance actors can play an active role in making sure that artisans are aware of the types of support that are already available. For example, a guide could be created that shows different support services that are available for artisans. Such a guide could be useful for helping artisans, producer groups, and local governance actors to learn about topics such as ways to get loans or types of training that are available. The creation of such a guide could also help with identifying overlaps and gaps in the support currently available (see Section 4.4.2).

4.5 Conclusion

With a purpose of identifying pathways to promote green job creation, this paper has drawn on experiences from FMC's Promote Bamboo MSME Clusters for Sustainable Development project and supplemental research, to explore the current circumstances facing India's artisanal bamboo producers. It has also considered potential markets where these artisans could sell their products and explored ways that production could be organised. Particularly, the benefits of collaborative production models have been highlighted and three governance models (buyer-led, third-party led, and self-governed) have been outlined.

Finally, four key opportunities for promoting green job creation have been identified as supporting producer upgrading, encouraging producer collaboration, facilitating new market links, and restructuring governance systems to support overarching improved dynamics in the production ecosystem. This chapter has provided an overview and discussion of different tactics that can be taken to enable these opportunities. Overall, the governance options outlined can support the growth of green jobs in India's artisanal bamboo industry.

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Annex A: Interviews

A.1 Interviews 2020-2021

This report draws from a set of in person industry interviews that took place from 2020 to 2021. These interviews were coordinated by a team of researchers from Copenhagen Business school, which included Peter Lund Thomsen, Uzma Rehman and Søren Jeppesen.

#	Role	State/ Union Territory	Age	Caste / Tribal Status/ Religion	Education	Employees	Sex	Civil Status	Own Business	Products
I1	Artisan	Odisha	27	SC	Up to 8th	0	F	Married	--	Kula (Paddy/Rice Separator), Dala (tray)
I2	Artisan	Odisha	21	SC	Up to 10th	0	F	Married	--	Kula(Paddy/Rice Separator), Dala, Basket, Hand Fan, Parla
I3	Artisan	Odisha	36	SC	Up to 8th	1 Occasional	F	Married	--	Large Variety
I4	Artisan and Bamboo Product Trader	Megha-laya	60	ST	None	2 Occasional men (2-4 days) and occasional women for about 27 days	F	Widow	--	Mats, waste bamboo slivers
I5	NGO Founder	Megha-laya	40	ST	BA	Volunteers	F	Married	NGO	--
I6	Artisan	Megha-laya	50	ST	Up to 3rd	Unspecified Occasional	F	Married	--	Mats, baskets, jewellery, decoration products
I7	Secretary of Multi-purpose Cooperative	Megha-laya	55	ST	Up to 3rd	4 (reduced due to Covid)	F	Married	Registered Cooperative	Baskets, cane stoles, decoration products
I8	Bamboo Product Trader	Assam	48	Muslim	Up to 10th	1 Occasional	F	Married	Yes, Unregistered	Mats
I9	Artisan and Bamboo Product Trader	Assam	38	OBC	Up to 10th	5-6 Occasional	F	Married	Yes, Registered	Small decorative items, basket, strainer, hand fan, mat, Japi(bamboo hat)etc

I10	Artisan and Bamboo Product Trader and Raw Material Supplier	Assam	43	Muslim	Up to 10th	--	F	Married	Yes, Registered	--
I11	Bamboo Product Trader (and artisan)	Assam	32	--	Up to 6th	4	F	Married	--	tray, vase, chair, pen stand, etc
I12	Artisan and Bamboo Product Trader and Trainer	Assam	38	Muslim	Matric (passed 10th exam)	2	F	Married	Yes, Registered	Large Variety
I13	Trader (and artisan)	Madhya Pradesh	50	Muslim	Up to 3rd	2	F	Widow	Yes, Registered	Raw Material (bamboo poles?) and Bamboo Products?
I14	Artisan	Madhya Pradesh	28	Banskar	Matric (passed 10th exam)	--	F	Married	--	Furniture, tray, baskets, and other handicrafts
I15	Bamboo Product Trader	Madhya Pradesh	32	Mehra	Up to 10th	--	F	Married	--	Trays, baskets, mats, broom, etc (maach, supa, dalla, dalliyyan, tokni)
I16	Bamboo Product Trader	Madhya Pradesh	34	Prajapati Kumhar	Up to 8th	1 Occasional	F	Married	--	Trays, baskets, brooms
I17	Bamboo Product Trader	Madhya Pradesh	35	Prajapati Kumhar	Up to 5th	0	F	Married	--	Trays, baskets, brooms
I18	--	Madhya Pradesh	--	Banskar	--	--	F	--	--	--
I19	--	Madhya Pradesh	--	Banskar	Up to 8th	--	F	--	--	--

A.2 Interviews 2022

An additional set of industry interviews were conducted by Rachel Alexander in 2022.

#	Format	Role(s)	State/Union Territory
I20	Video Call	Expert on bamboo Industry in Odisha, Jharkhand, and Madhya Pradesh	NA
I21	Video Call	Representative of FMC bamboo project in Odisha	NA
I22	Video Call with 2 interviewees	Representative of FMC bamboo project in Jharkhand Representative of bamboo project facilitating agency in Jharkhand	NA
I23	In person with 2 interviewees	Representatives of FMC bamboo project in Delhi	Delhi
I24	Video Call	Representative of DC Handicraft in Odisha	NA
I25	In person	Representative 1 of Aide et Action	Odisha
I26	In person	Representative of ORMAS	Odisha
I27	In person	Representative of a national bank	Odisha
I28	In person	Representative private small finance bank	Odisha
I29	In person	Representative 2 of Aide et Action	Odisha
I30	In person	Representative of FMC bamboo project in Odisha	Odisha
I31	In person group interview	Female artisans from Mundher	Odisha
I32	In person group interview	Female artisans from Laumal	Odisha
I33	In person with 2 interviewees	Representatives of ESAF CFC	Jharkhand
I34	In person	Government bank liaison	Jharkhand
I35	In person	Small finance bank	Jharkhand
I36	In person	NABARD	Jharkhand
I37	In person	RSETI	Jharkhand
I38	In person	Female artisan from Ghasipur	Jharkhand
I39	Video call	Representative of bamboo project facilitating agency in Jharkhand	Jharkhand
I40	In person	Male artisan from Shimla	Jharkhand
I41	In person	SIDBI	Assam
I42	In person with 2 interviewees	Representative of MAATI Community Representative of Bamboo Civilization	Assam
I43	In person	Male artisan in Raypur	Assam
I44	In person	Male artisan in Baluki Salamari	Assam
I45	In person	Representative of facilitating agency in Assam	Assam
I46	In person	Representative State Rural Livelihoods Mission	Assam
I47	In person	Representative 3 of FMC Delhi office	Delhi
I48	In person	Representative of FMC bamboo project in Jharkhand	Jharkhand

Annex B: Key Institutional Actors in India's Bamboo Industry

B.1 International Actors

Asian Development Bank (ADB)

- Working to develop Integrated Bamboo Parks

International Network for Bamboo and Rattan (INBAR)

- Intergovernmental development organisation that promotes environmentally sustainable development using bamboo and rattan

Japan International Cooperation Agency (JICA)

- Project for Sustainable Forest Management Project in Tripura

SWITCH-Asia

- Supporting FMC' s bamboo project along with the European Union

United Nations Development Organisation (UNIDO)

- Supporting the Cane and Bamboo Networking Project in the northeast

United Nations Development Programme (UNDP)

- In partnership with the EXIM Bank, is implementing a project "Capacity Building of the MSMEs in North East India for Export Competitiveness"

B.2 National Actors

B.2.1 Government Ministries, Departments, and Programmes

National Rural Livelihoods Mission

- Seeks to reduce poverty by enabling households to access gainful self-employment and skilled wage employment opportunities, with state determined goals and a programme that operates at the national, state, district and sub-district levels

Make in India

- Initiative of the Government of India to support manufacturing in India

MGNREGA Plantation, Low budget housing (Indira Awas Yojna)

- Job creation programme

Ministry of Agriculture and Farmers' Welfare

- Department of Agriculture Cooperation and Farmers Welfare is involved with: propagation and cultivation in non-forested lands; promotion and development of infrastructure for bamboo markets; and, training and skill development

- Department of Agriculture Research and Education is involved with project-based R&D activities; and, field trials, demonstration and pilot projects
- Managing the National Agro Forestry and Bamboo Mission (formerly known as the National Bamboo Mission)

Ministry of Commerce and Industry
- Supports international trade issues related to bamboo industry and export promotion
- Promotes domestic bamboo industry

Ministry of Cooperation

- Running the National Cooperative Development Corporation (NCDC), which provides support to cooperatives

Ministry of Environment, Forest and Climate Change
- R&D including on high productivity varieties, tissue culture, testing and standardization and field trials
- Development of value-added products
- Incorporating bamboo grown in forests into the value chains
- Manages the National Afforestation Programme
- Runs the National Mission for Green India (GIM) under the National Action Plan on Climate
- Indian Plywood Industries Research & Training Institute is exploring creating bamboo composites and offers the following bamboo-based courses: bamboo primary processing, bamboo primary processing and mat making, preservative treatment for bamboo, processing of bamboo mat board, and bamboo-based housing systems

Ministry of Housing and Urban Development
- Supports and mandates use of bamboo in government constructions, especially in major bamboo bearing states

Ministry of Micro, Small and Medium Enterprises
- Promotes of bamboo treatment and preservation
- Establishing of micro/medium processing units
- Promotes products developed by IPIRTI and other Institutions
- Covers handicrafts/cottage industry, furniture making, fabric/ jewellery making, incense stick making, bamboo board /mat/corrugated sheets/floor tiles making and others
- Establishing common facility centres (CFCs)
- Establishing of Livelihood Business Incubators (LBIs)
- Runs Micro Small Medium Enterprise Development Institutes
- Micro & Small Enterprises - Cluster Development Program (MSE-CDP)
- Khadi and Village Industries Commission
- Scheme of Fund for Regeneration of Traditional Industries (SFURTI) promotes cluster development; multiple schemes have been merged into SFURTI: Scheme for Enhancing Productivity and Competitiveness of the Khadi Industry and Artisans, Scheme for Product Development, Design Intervention and Packaging (PRODIP), Scheme for Rural Industries Service Center (RISC), and other small interventions including Ready Warp Units and Ready to Wear Mission (UNDP 2018)

Ministry of New and Renewable Energy

- Promotes use of bamboo and bamboo waste in power generation

Ministry of Petroleum and Natural Gas

- Provides technical support and policy frame work for development of bio-fuels and
- Promotes use of bamboo as raw material for bio-fuel

Ministry of Power

- Promotes use of bamboo and bamboo waste in power generation

Ministry of Textiles

- Promotes R&D and upscaling of technology for use of bamboo fibre and fabric
- Promotes design, product development, establishment of CFC, skilling and capacity development on furniture, basketry, utility products, jewellery, mat-based product, and others
- Promotes technology adaptation and promotion and marketing of innovative products
- Runs DC Handicraft which provides artisans training in technical and marketing skills

Ministry of Science & Technology

- Supports R&D for various activities in the value chain

Ministry of Skill Development & Entrepreneurship

- Develops job roles and curriculum for accredited courses on various faces of bamboo sector in association with the concerned Ministry/Department and Sector Skill Councils, including Recognition of Prior Learning (RPL)
- Pradhan Mantri Kaushal Vikas Yojna is a skill certification scheme aiming to enable a large number of Indian youth to take up industry-relevant skill training that will help them in securing a better livelihood

Ministry of Rural Development

- Promotes bamboo-based livelihoods and constructions
- Runs Rural Self Employment Training Institutes (RSETIs)

Ministry of Textiles

- Scheme for Design and Technology Upgradation aims at upgradation of artisans' skills, development of new design and prototypes supply of improved/modern equipment to the craftpersons, revival of rare crafts to preserve the traditional heritage, and the preservation of traditional art and crafts of high aesthetic value.

Ministry of Tribal Affairs

- Supports livelihood development in tribal communities
- Creation of self-employment through skill development, providing tools and raw material for making bamboo articles and market assistance
- Runs Tribal Cooperative Marketing Development Federation of India (TRIFED)

NITI Aayog

- Bamboo Development Taskforce
  - Will develop National Integrated Bamboo Development Policy

- Creation of National Bamboo Development Authority (for convergence and synergy among all federal and state schemes related to bamboo)
- Plan for establishing a Bamboo Innovation/Incubation Center
- Scheme for establishing bamboo special economic zones (SEZs)
- Provision for tax exemptions for bamboo SEZs

Swachh Bharat Abhiyan (Clean India Mission)

- Programme that creates toilets, including those out of bamboo

B.2.2 NGOs, Technical and Training Institutions

Agriculture Skills Council of India

- Supports propagation and management of bamboo (factual knowledge of propagation, processing, and management of bamboo) and value addition and marketing of non-timber forest products

Bamboo and Cane Development Institute

Centre for Green Building Material and Technology

Centre for Indian Bamboo Resource and Technology (CIBART)

- Works work with poor rural communities to reduce poverty, enhance livelihood security and improve the quality of their lives by complementing and enhancing existing livelihoods with resilient alternatives using bamboo, through technology and applications development, skill building, and raising productivity and incomes

Forest Research Institute

Furniture and Fittings Skill Council

- Not-for-Profit organization focusing on establishing an effective and efficient eco-system for development and imparting of skills for the furniture and fittings industry including relevant curriculum, courses, information database, delivery system, standardization, accreditation and certification processes to enhance the employability of the Indian workforce globally

Green Skill Development Programme

- Offers courses: Propagation and Management of Bamboo; Value Addition and Marketing of Non-Timber Forest Products – Bamboo Crafts

Handicrafts and Carpet Sector Skill Council

- Develops the skill ecosystem for the sector and offers qualification packs: Bamboo Mat Weaver (aimed at training candidate's basics and techniques for the job), Bamboo Basket Maker, Bamboo Utility Handicraft Assembler (Training for cutting out and processing material to achieve quality bamboo utility handicraft

IDC School of Design at the Indian Institute of Technology (IIT Bombay)

- Has academic programs in the areas of Industrial Design, Visual Communication, Interaction Design, Animation, and Mobility & Vehicle Design

IIT Delhi (Bamboo Research Group)

- Under the 'National Agricultural Innovation Project' they studied properties of bamboo and looked at using bamboo for beams and columns for rural houses, as well as developing and designing bamboo-based applications for sustainable bamboo cultivation

Indian Institute of Crafts and Design

Indian Wood Science and Technology

- Bamboo modules are taught in the department of Forest Biodiversity, with courses on various forest species, one of them being bamboo

Industrial Training Institute, Udaipur

- Offers the following bamboo-based courses: Bamboo Works (NSQF), COE-Bamboo Technology – BBBT

National Bank for Agriculture and Rural Development

- Supporting bamboo farming to support the National Bamboo Mission action plan for upgrading bamboo economy with the aim of developing bamboo farming, processing and marketing as a mainstream activity by changing 'forestry mindset' into 'farm mindset'

National Centre for Design and Product Development

National Institute of Design

B.2.3 Financial Institutions and Additional Organisations and Programmes Providing Financial Support

Mudra scheme

- Offers loans up to 10 lakhs to individual entrepreneurs and MSMEs

National Bank for Agriculture and Rural Development (NABARD)

- Provides grants for off farm producer organisations and support artisans to attend exhibitions and fairs

The Prime Minister Employment Generation Programme (PMEGP)

- Loan scheme with subsidies

Small Industries Development Bank of India

Technology Information Forecasting and Assessment Council

B.2.4 Industry Associations and Other Organisations

All India Agarbathi Manufacturers Association (AIAMA)

Bamboo Society of India

- Conducts research, disseminates information, organises events, implements bamboo development projects, advocates for interests related to bamboo

Export Promotion Council for Handicraft (EPCH)

- Organizes trainings and capacity building

Indian Institute of Entrepreneurship

- Provides training, research and consultancy activities in the small industry sector focusing on entrepreneurship development

B.3 Regional and Local Actors

Business Development Service Providers

- Providing services to bamboo artisans, some participated in FMC's bamboo project

Common Facility Centres

- Supporting bamboo artisans, some participated in FMC's bamboo project

District Industries Centres

- Promoting small village and cottage industries in a particular area

Equipment/Input Suppliers

- Providing inputs to bamboo artisans, some participated in FMC's bamboo project

State Rural Livelihood Missions

B.3.1 North-East Regional Actors

Advanced Research Centre for Bamboo and Rattan

Guwahati and the Rain Forest Research Institute

Ministry of Development of North East Region

- Runs activities in the 8 States of the North East in conjunction with the concerned line Ministries

North East Cane and Bamboo Development Council

- Formerly Cane and Bamboo Technology Centre, assists the North Eastern Council in implementing various developmental activities in the cane and bamboo sector and is also the implementing

agency for the National Agro Forestry & Bamboo Mission (NABM) in the North Eastern Region and the States of Bihar, Jharkhand, West Bengal and Odisha to provide technical support to the State Bamboo Mission by acting as the Bamboo Technical Support Group (BTSG)

North-East Regional Bamboo Mission

North-Eastern Centre for Technology Application and Research

North-Eastern Council

North East Council

- Provides financing

North Eastern Development Finance Corporation Ltd

- Provides financing

North Eastern Handicrafts & Handlooms Development Corporation Ltd (NEHHDC)

B.3.2 Assam-Based Actors

Anachalic Gram Unnayan Parishad

- A non-government organization that concentrates upon overall socio-economic development, disaster response and rehabilitation, rights of the vulnerable – children and women, women empowerment awareness generation, sanitation agriculture, animal husbandry, skill and entrepreneurship development, promotion and marketing of village products

Assam Government Marketing Corporation Ltd (AGMC)

Bamboo technology Park

- A company promoted by Assam Industrial Development Corporation Ltd. (AIDC) and a few private enterprises with primary objective of providing infrastructure facilities to bamboo entrepreneurs against payment of user charge

District Industries & Commerce Centre (DICC)

Government of Assam Industries and Commerce Department

- Assam Bamboo and Cane Policy 2019

Green Value Rural Development Society

- NGO targeted at implementing rural development projects with government sponsors

Society of Professional and Management Network (SPMN)

- Engaged as facilitating agency for Assam under ongoing European Switch Asia Action “Promote Bamboo MSMEs for Sustainable Development”, is working to focus on grounding entrepreneurs

in four sectors: lifestyle and craft products, housing and construction, plantation & processed raw material supply, and bamboo waste management

South Asia Bamboo Foundation

- Non-profit trade association that provides services on bamboo and its production related knowledge and technology, talent training and environmental infrastructure

State Bamboo Development Agency

State Institute of Rural Development (SIRD), Assam

Svami Vivekananda Assam Youth Empowerment Yojana (SVAYEM)

B.3.3 Jharkhand-Based Actors

Evangelical Social Action Forum (ESAF)

- Registered charity

Jharkhand Education Centre (CED), Ranchi

- An institute for Socio-Educational Development & Research and it also promotes art, craft and culture of Jharkhand Ranchi

Jharkhand Government Tool Room

Jharkhand Silk Textile and Handicraft Development Corporation Ltd (JHARCRAFT)

Jharkhand State Bamboo Mission

Jharkhand State Rural Livelihood Promotion Society (JSLPS)

Kalamandir, Jamshedpur

- Organisation that focuses on preserving and restoring tribal art and culture

Mukhyamantri Laghu Evam Kutir Udyam Vikas Board

Society for Rural Industrialisation (SRI), Ranchi

- A voluntary organisation committed to tender scientific and technological support for rural development. SRI worked with the bamboo artisans of Ranchi and Hazaribag districts with the support of Jharkhand's state government

Tata Steel Rural Development Services (TSRDS) Jamshedpur

- Conducted skill enhancement training and market linkages partnership with the Kalamandir of Jamshedpur

Xavier Labour Relation Institute (XLRI), Jamshedpur

B.3.4 Odisha-Based Actors

District rural Development Agency, Govt. of Odisha

- Focuses on implementation for implementation of schemes at district level with concentration on on MNREGA and PMAY
- Conducts training and awareness programmes on income generation activities

Odisha Bamboo Development Agency

Odisha Livelihood Mission

Odisha Rural Development and Marketing Society (ORMAS)

- A state level marketing agency led by Odisha Govt with headquarters at SIRD campus Bhubaneswar and district level offices that provides support for non- farm livelihood activities, marketing support, skill development through different projects and support system they have at district level
- Has 2 bamboo cluster staff, used money provided by the state government to buy machinery, pay staff, conduct capacity building, organised an exposure visit to another state, develop branding

Make in Orissa

- Supporting business development

Start Up Orissa

- Supporting business development